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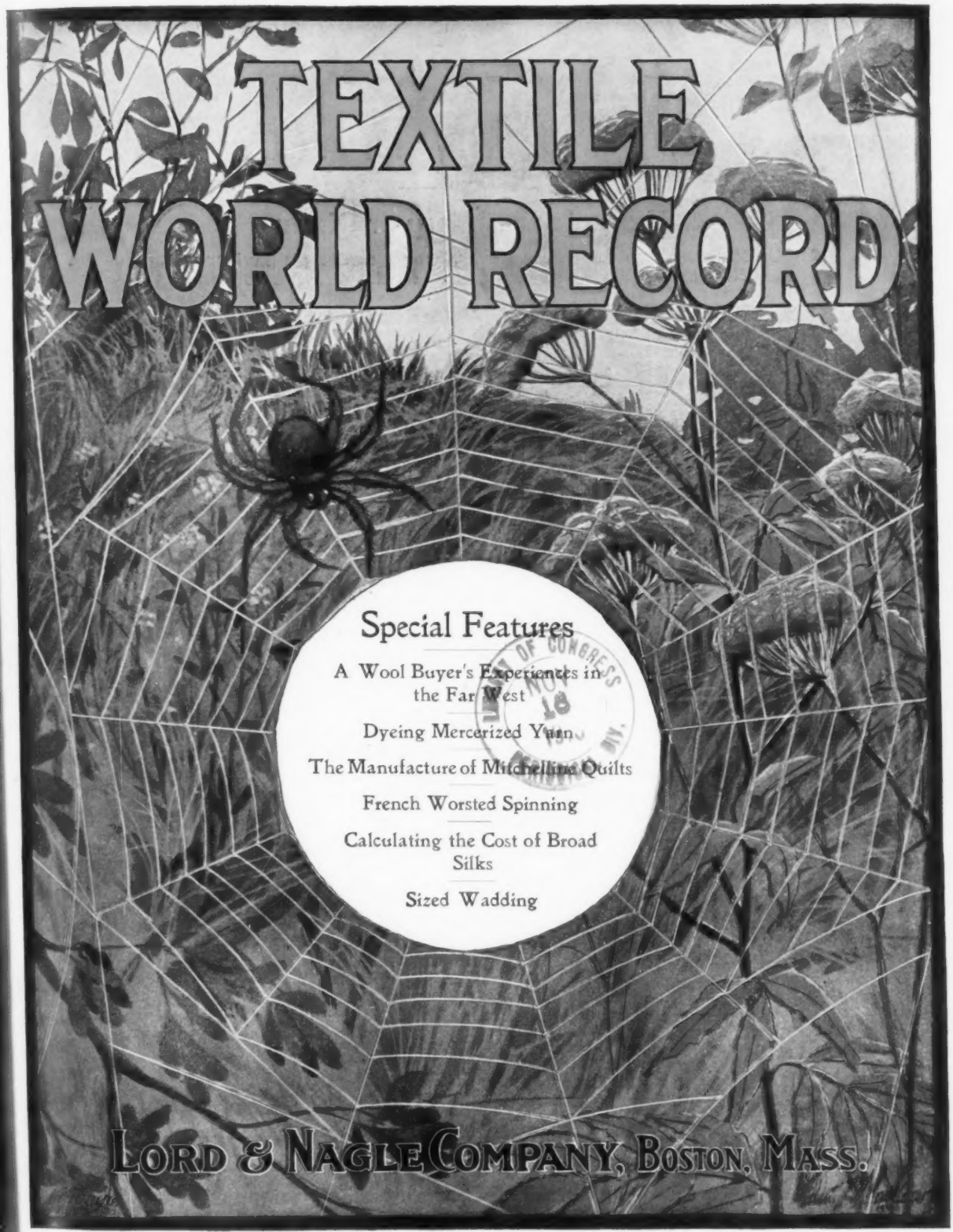

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Correspondence.

We solicit correspondence on textile subjects. Articles accepted will be paid for. Name and address must always be given, not necessarily for publication. Subscribers are invited to make free use of our Questions and Answers Department; correspondence is strictly confidential.

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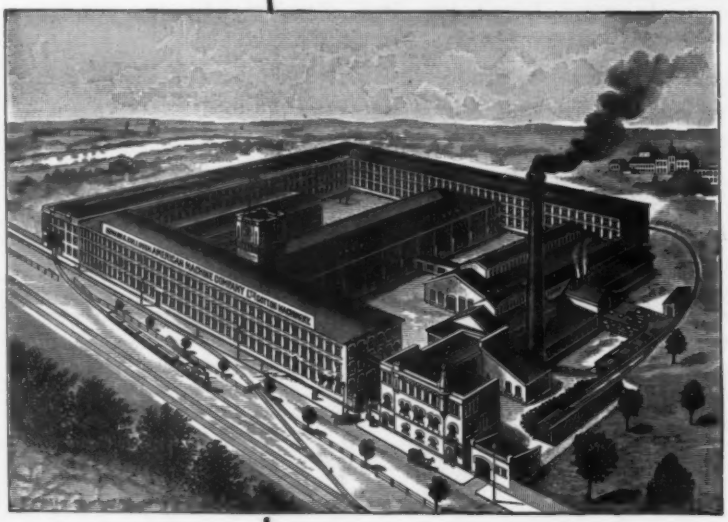

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VOL. 40 (NEW SERIES.) November, 1910 No. 2

Monthly Comment.

The Compulsory Working of Patents.

The reciprocal patent treaty negotiated last year by Germany and the United States, combined with the failure to enact a compulsory working patent law in this country has created conditions that are arousing a storm of protests from German manufacturers. Their grievance and desire for a remedy are clearly stated in the following petition recently presented to the Bundesrat by the Manufacturers' Association of Southwest Germany:

In 1907 Great Britain enacted a law requiring the compulsory working of patents, this action being taken at the instigation of English manufacturers. The compulsory working provision, which was entirely new in England, caused great loss to the German export trade and the entire industry of Germany. The United States, which was also injured by the English law, immediately set to work to frame and enact a law requiring the compulsory working of foreign patents in America. In February, 1908, a bill was introduced in the American House of Representatives requiring the working of patents granted in the United States. In order to prevent the proposed American law from causing German industries the loss and serious inconvenience that had resulted from the English law, the German government with the best of intentions, but with great haste and precipitation, negotiated a reciprocal treaty with the United States which went into effect on Feb. 23, 1909.

This treaty provided that the subjects of one country should not be required to work their patents in the other country to any greater extent than was required in the home State. In other words: The reciprocal arrangement relieved the American owner of a German patent from the necessity of working his invention in German under the compulsory working clause of the German law, and it assured the German owner of an American patent that he would not be compelled to work his invention in the United States if a compulsory working law was enacted there. By entering into this reciprocal arrangement the German Government carried on a commendable purpose to benefit the industries of Germany. Unfortunately, however, in negotiating this treaty the German representatives failed to take into account the possibility that a compulsory working law would not be enacted in the United States. This oversight has unfortunately resulted in great injury to certain branches of German industries and may have very serious consequences for the entire industry of the country, if the patent treaty with the United States is not terminated or suitable provision made in the new German patent law for correcting the existing evils. This unfortunate result is due to the fact that the bill introduced in the American House of Representatives in February, 1908, has not been enacted, and moreover it is not probable that a compulsory working patent law will be enacted in the United States in the near future. Under these conditions the patentees of Germany and the United States areplaced in a very unequal position, the result being that the German patentees are injured while the American owners of patents are favored. The German owner of a German patent is required to work his invention in Germany, while the American is free from that requirement. The association, therefore, urgently petitions the chancellor to exert every effort to bring about the termination of the German-American patent treaty of Feb. 23, 1909, at the earliest opportunity, or to insert in the new German patent law a provisions by which the privileges now granted to American owners of German patents will be withdrawn.

Undoubtedly the failure to enact a compulsory patent law in the United States results in this discrimination against German owners of German patents, but that is not

the whole story. For forty years the people of the United States have suffered discrimination, while the people of Germany have enjoyed special privileges of great value under the patent laws of the two countries. During that long period Germans could protect their inventions by patents in the United States without the necessity of working them on American territory, while Americans found that in order to protect their inventions in Germany they must work them on German soil.

We have no reason for complaint against Germany on account of this discrimination for forty years. The fault is all our own, because we could have secured fair treatment at any time by passing a law requiring that foreign inventions patented in the United States must be worked in the United States. Until three years ago Great Britain allowed her industries to suffer in the same way that we have, but in 1907 she woke up and by passing a compulsory working patent law, set an example that we should follow. There is, consequently, no occasion for the Germans to get excited over existing conditions. They can annul the patent treaty and pass what laws they please. The United States can respond with laws that will put an end to the absurd patent conditions that have existed between the two countries since 1870.

A German Shoddy Combine.

The German shoddy trade is stirred by a movement toward a combination of the leading firms. Some years ago a well planned attempt in this direction resulted in failure from a variety of causes, among which were English competition and mutual distrust among the German shoddy manufacturers. It is now proposed to form an organization for the protection of the common interests of the trade, and make no attempt to establish a cartel for the control of prices. This movement recalls the association of American shoddy dealers organized at Boston in March, 1909, and of which nothing has been heard since.

Water Transportation to Texas.

The Boston Chamber of Commerce has recently made an investigation of the need of a steamship line between Boston and Texas ports. A special committee was appointed whose report has been made by Robert Rantoul, who gives most convincing reasons for improving the water transportation between Boston and the great Southwest. Following is an extract from the report:

To give some idea of the magnitude of the opportunities, I have endeavored to make an estimate of such existing tonnage as I believe New England to be interested in and as from its nature could reasonably be expected to secure its share:

NORTHBOUND.

Cotton, incl. exports via Northern ports	175,000 tons
Hides and skins	25,000 tons
Lumber	50,000 tons
Lead and spelter	12,500 tons
Rice products	30,000 tons
Wool and hair	20,000 tons
All others	15,000 tons
Total	327,500 tons

SOUTHBOUND.

Bags and bagging	25,000 tons
Boots, shoes and rubbers	5,000 tons
Dry goods and textiles	30,000 tons
Drugs and chemicals	15,000 tons
Groceries, etc.	12,000 tons
Hardware	70,000 tons
Paper	50,000 tons
Potatoes	15,000 tons
Wire and products	40,000 tons
All others	25,000 tons
Total	287,000 tons

In these estimates on southbound business, little else than Texas was considered. Not that the movement to the rest of the southwest, California and Mexico via the Gulf is not considerable, but because those sections were not visited and consequently no estimate of its volume has been attempted.

One could not, of course, safely count on all New England tonnage making use of the Boston gateway, a portion of it being geographically so located that rate conditions as well as distance would make New York the natural outlet; nor could one expect that all competition would be eliminated from the balance. It would, therefore, be my judgment that a Boston steamship line should embrace in its program a call at some intermediate port, at least southbound, for the double purpose of reducing coaling costs and of reaching some of the enormous iron and steel tonnage moving from Pennsylvania and Ohio, conservatively estimated at over 250,000 tons a

year to round out cargoes; as much of the New England products are light and bulky, paying relatively high rates but not making great weight.

The International Cotton Census.

The last report of cotton at the mills and consumed, dated March 1, and issued by the International Cotton Federation, indicates plainly the existing scarcity of cotton, but not so plainly the effects of short time in the mills. Following is a summary of the reports since the system was established by the Federation:

STOCKS AT FOREIGN MILLS.

Date.	Total Spindle.	Bales on hand.	Bales used per week.	Stocks will last
Aug. 31, '05	46,726,929	935,237	103,269	9 weeks
Mar. 1, '06	54,297,537	1,237,180		
Aug. 31, '06	66,072,303	1,210,610	145,603	8.3 weeks
Mar. 1, '07	71,054,503	1,911,071		
Aug. 31, '07	74,279,078	2,368,410	190,811	12.4 weeks
Mar. 1, '08	78,984,106	2,342,127		
Aug. 31, '08	83,371,883	2.132,045	215,472	9.9 weeks
Mar. 1, '09	85,906,697	2,425,127		
Aug. 31, '09	88,188,004	2,275,392	222,740	10.2 weeks
Mar. 1, '10	91,154,411	2,492,688		
Aug. 31, '10	91,124,025	2,005,786	236,990	8.4 weeks

STOCKS AT AMERICAN MILLS.

Date.	Total Spindle.	Bales on hand.	Bales used per week.	Stocks will last
Aug. 31, '05	23,687,495	776,801	82,288	9.4 weeks
Aug. 31, '06	25,250,096	688,312	94,413	7.3 weeks
Aug. 31, '07	26,242,000	996,000	95,904	10.4 weeks
Mar. 1, '08 est.	27,000,000	1,089,119		
Aug. 31, '08	27,846,000	596,000	87,981	6-4 weeks
Mar. 1, '09	27,846,000	1,831,800		
Aug. 31, '09	27,783,000	908,000	97,788	9.3 weeks
Mar. 1, '10	28,000,000	1,674,000		
Aug. 31, '10	28,349,000	518,000	90,519	5.7 weeks

The figures for Aug. 31, 1910, are for mills having 119,473,025 spindles out of a total of 133,384,794 spindles in all countries. The United States Census Bureau supplies the statistics for this country, while those for other countries are collected by the very efficient system of the International Federation.

A noteworthy feature of the last report is the small amount of cotton on hand, 2,523,786 bales, as compared with 3,183,392 bales for practically the same number of spindles on the same date in 1909. Another interesting feature of this report is the large weekly consumption of cotton by the foreign mills in spite of the efforts exerted to bring about short time. The International Federation was founded for the purpose of getting cotton spinners in all countries to restrict the consumption of cotton in accordance with a prearranged plan. The United States has so far been kept free from this international plan, which has been pushed in all other countries. Despite these conditions the Federation's report for a year in which a shortage of cotton has prevailed shows a marked increase in the weekly consumption of cotton by foreign mills, and an equally pronounced decrease in the weekly consumption by American mills. How is this apparent anomaly to be explained? Does an organized effort to bring spinners into line on a short time schedule cause them to use more cotton per week? Are cotton spinners, when left to act on individual initiative, more disposed in time of a cotton shortage to curtail operations in their mills?

These are some of the interesting questions suggested by the last cotton census of the International Cotton Federation. Whatever may be the correct answers, one thing is certain, the Federation is rendering a valuable service not only to the cotton trade, but to the world, by compiling and issuing these reports of mill stocks and consumption of cotton. It is a laborious and expensive undertaking, and we are gratified to know of the continuous cooperation of the United States Census Bureau in supplying the figures for this country.

Fraud in Turkish Wool.

We have all heard of bunco men, three-card monte sharps and Spanish prisoner men, and now certain swindlers in Turkey are rapidly acquiring an equally unsavory reputation in the English wool trade. Several wool firms that have been victimized agree as to the essential features of the game. The crook in Turkey mails samples of wool to the English dealer quoting a low price, but not so low as to arouse suspicion, the terms of sale to be 80 per cent. cash against invoice and bill of lading by sight draft. The draft and bill of lading are presented before the material arrives, and the 80 per cent. cash is paid. In the course of time the "wool" arrives and is found to be low grade cow hair. A search at the Turk-

ish shipping port invariably fails to locate the shipper. Recent operations are but the revival of the swindle which was worked on the English trade in 1905 and may be worked again in 1915 or perhaps earlier. As our English correspondent writes us, "It is shown again that you have only to get hold of a few samples of wool and offer them much below the market price in order to deceive hard-headed people who wouldn't trust a neighbor as far as they could throw him." A New York importer of wool informs the Bureau of Manufactures at Washington that he had received offers of wool from Constantinople at prices below the market, and with the terms the same as those by which the English dealers were defrauded.

American and Other Cotton.

Our August record of contributions by the factory operatives of Lancashire to the treasury of the British Cotton Growing Association has called forth what seems to us to be an unnecessarily heated reply from the "Cotton Factory Times," in the course of which that sprightly journal says:

> The "Textile World Record" ought to know, and does know, of course, that the cotton trade, not only of Lancashire, but of the United States and of the world at large, has been suffering for some time past from insufficient crops of the staple, and as a result prices have gone up to a prohibitive rate. It knows, also, that the stocks of cotton have been engineered by unscrupulous gangs of speculators, who are in the trade for the very purpose. Perhaps, too, it chooses to forget that in years past the area of cultivation in the States has been deliberately restricted, and stocks of cotton even wantonly destroyed, in order to bring about artificial scarcity and inflated prices. That sort of commercial morality may pass muster with the "Textile World Record" and Yankee monopolists, but it certainly does not square with professed solicitude for those who happen to suffer from its effects.

A variety of conditions may justify the restriction of production as a means of self-preservation in every branch of industry, whether cotton growing or cotton manufacturing. Conditions make short time necessary in cotton manufacturing at the present time. It is equally justifiable at times in cotton growing, but the attempts arbitrarily to restrict the cotton acreage in the United States have always ended in failure. The passage quoted from the "Cotton Factory Times" comes, therefore, with bad grace from the home of an organization whose main object is to restrict the consumption of cotton in accordance with a prearranged plan. As far as "wantonly destroying" cotton is concerned, the "Cotton Factory Times" is surely too intelligent to believe that the Yankees are so stupid as to try to increase their wealth by destroying it.

We must confess that we do not understand what is meant by the assertion that "the stocks of cotton have been engineered by unscrupulous gangs of speculators." If it means that prices of cotton have been manipulated by speculators, our reply is that we have tried our best to awaken the cotton trade to the need of devising and applying a businesslike remedy for that evil, and that the chief obstacle thus far encountered has been the refusal of the Lancashire cotton trade to cooperate in providing an international organization to do that important work.

"The Cotton Factory Times" winds up its evidently ill-considered attack with this parting advice:

> The "Textile World Record" is content to believe that "all the evidence goes to show that the British colonies afford a means of increasing the world's cotton supply far inferior to the best." It is sufficient to the present purpose to retort that the scheme is yet in its infancy, that the results so far are satisfactory, and the prospects distinctly promising. The "Textile World Record" would do well to wait and see, and in the meantime, endeavor to reconcile its own views and desires with those of "Fibre and Fabric," published in the same city, which, as we showed last week, has been preaching the gospel of America for the Americans, looking anxiously forward to the time when the States would consume all the cotton they were able to grow, and even discussing the proposal to put an export tax on the staple, with a view to cutting us out quite.

Burdened, as we are, with the task of making our own editorial opinions square with each other, it surely would be an unhappy aggravation of our lot if we were also called upon to reconcile our opinions with those of our esteemed contemporaries. The idea of an export duty on cotton, which bobs up every little while, is a case in point. In March, 1909, we had occasion to expose that delusion by pointing to Article 1, Section 9, of the Constitution of the United States, which reads as follows:

No tax or duty shall be laid on articles exported from any State.

The repeal of that provision is about as likely as is the abolition of the British House of Commons. The United States guarantees free trade in cotton to all the world. If under free trade England finds herself without American cotton it will be solely because of England's failure to pay as much for it as is paid in other countries. And under such conditions Manchester would have neither colonial nor American cotton "in the offing." The colonial and American cotton crops both belong to those who will pay the highest price. Convinced of that fact will not the "Cotton Factory Times" join us in advocating a rational solution of the problems relating to cotton production and cotton gambling, in which the interests of the cotton operatives, spinners, manufacturers and consumers are so deeply involved?

Civic Advertising Pays.

Canada's rapid commercial progress is apparent from the fact that on every business day in the year the United States sells three-fourths of $1,000,000 worth of products to Canadians. American manufacturers have invested $275,000,000 in branch works there. Municipal bureaus through which advertising campaigns are pursued, have been established in the Canadian West. Four years ago the city of Winnipeg formed such an institution, headed by the City Council, Board of Trade, etc., called the Winnipeg Development and Industrial Bureau, which has spent for the forwarding of advertising for the present year $25,000, an increase of $23,500 over the appropriation in 1906. It would seem that civic advertising has paid, as the value of manufacturies in Winnipeg is worth $29,814,000 more than it was in 1900. To promote manufacturing the city is constructing a power plant costing $3,500,000. The Dominion Government has opened St. Andrew's locks on the Red River, thus placing Winnipeg in direct water communication with Lake Winnipeg, which is surrounded by a country rich in undeveloped resources. At a recent convention, the Canadian Manufacturers' Association adopted a resolution to spend $25,000 in an advertising campaign to support "Made in Canada" goods.

Net Weight for Twines.

The campaign in favor of the delivery of full weight and measure has recently been stimulated throughout the country by the work of Commissioner Driscoll at New York. The customs authorities have been led to prohibit certain trade customs by which imported goods were falsely marked. The latest development is the decision by a number of the leading dealers in twines to sell by net weight. The custom has been to include in the invoice weight more or less of the weight of burlap, paper, wooden reels, tubes, cones or other carrier or wrapping. Among the twine firms who have announced that they will sell in future by net weight are the Linen Thread Company, the D. P. Winne Co., New York, and the Silver Lake Co., Boston. Leaders of such prominence giving their support to the movement make it almost certain that net weight will become the generally accepted standard for the sale of twine. In the face of the inevitable demand by buyers that all tare be allowed other dealers will necessarily be compelled to conform to the new rule.

ELECTRICAL SHOW.

The fourth annual electrical show was held in Madison Square Garden, New York, October 10th to 20th, and was a great success, both from a popular and a financial standpoint. The Garden was transformed into a blaze of glory, and reminded one of the oft depicted fairyland of yore. The attendance was good both afternoon and evening, throughout the entire ten days. Among the many booths noted, the following are well known to the textile trade:

Genl. Elec. Co., Westinghouse Elec. & Mfg. Co., Dixon Crucible Co., Goulds Mfg. Co., Sumay Elec. Lamp Co., Holophane Co., International Corsp. School, Otis Elev. Co., Rider-Ericson Engine Co., Watson-Stillman Co., Lausden Elec. Wagons, The Moore Electrical Co., Am. Z. Lamp Co. and many others.

THE KNIT GOODS MANUFACTURERS' ASSOCIATION.

The fall meeting of this association was held at Utica, N. Y., on Oct. 27. Following the usual custom the business session was behind closed doors, and no announcement was made as to the proceedings. In the evening a banquet was given at the Fort Schuyler Club which proved to be a most enjoyable affair.

THE TEXTILE EXHIBITORS' ASSOCIATION.

The annual meeting of the Textile Exhibitors' Association was held at the Parker House, Boston, on the evening of October 12. The business meeting was preceded by dinner at 6.30. About twenty members were present.

The election of officers resulted in the reelection of the old board with the exception of two vacancies caused by the retirement of two members of the executive committee. The reelected officers were empowered to fill these vacancies. The officers chosen were: President, F. H. Bishop of the Universal Winding Co., Boston; vice-president, H. W. Butterworth of H. W. Butterworth & Sons Co., Philadelphia; secretary-treasurer, Chester I. Campbell; executive committee, E. F. Hathaway of the American Warp Drawing Co. and M. H. Merrill, N. E. Manager of the Allis-Chalmers Co.

A discussion as to when and where the next meeting should be held brought forth a variety of opinions. Boston was the preference of the majority of those who expressed their views. It was finally voted to leave the whole question of the next meeting to the executive committee, with instructions to canvass the entire membership of the association for an expression of opinion.

The success of the last two exhibitions which have been held at the Mechanics Building, Boston, have been so pronounced that the association is on a firm footing both in prestige and financially. There is no longer any question as to the advantage and success of these meetings. Members of the association who have exhibited are well satisfied with the results and desire that the membership should be extended, to include all concerns selling machinery equipment and supplies to textile mills. The annual assessment is $10 a year and the net income from the exhibitions which have already been held has been sufficiently large to cover all expenses and leave the membership fees intact as a reserve fund, which together with other additions, now amounts to a figure which assures the members of the association of no danger of being called upon to make up a deficit. Their exhibition is one of the recognized events of the year in textile circles.

AMERICAN COTTON MANUFACTURERS' ASSOCIATION.

At the meeting of the board of governors of this association in New York last month it was decided to hold the annual meeting next spring at Richmond, Va. On the same day this decision was reached the board of governors of the American Cotton Manufacturers' Association were entertained at the Engineers' Club by the board of governors of the National Association of Cotton Manufacturers. It was announced that at this joint meeting various matters of interest to the cotton industry were discussed, but that no action was taken looking to the amalgamation of the two associations.

INDUSTRIAL EDUCATION.

The fourth annual convention of the National Society for the Promotion of Industrial Education will be held at Perkins Hall, 264 Boylston St., on Nov. 17-19. The headquarters of the society will be at Hotel Lenox. The objects of this society are: To bring to public attention the importance of industrial education as a factor in the industrial and educational development of the United States; to provide opportunities for the study and discussion of the various phases of the problem; to make available the results of experience in the field of indus-

trial education both in this country and abroad and to promote the establishment of institutions for industrial training.

Addresses will be made by some of the leading educators of the country on the following subjects: demands and opportunities for girls in trades and stores; the needle trades; what the schools can do to train for these trades; what more should the schools do to meet the demands; the training of teachers for girls' trade schools; new requirements made by the trade schools; inadequacy of the present source of supply; what more can schools do to meet the new requirements; apprenticeship and corporation schools; part time and evening schools; the Beverly industrial school; the public schools and the apprentices of Cincinnati; the evening schools of Boston; evening industrial schools of Massachusetts.

Experiences of a Wool Buyer in the Far West.

(By Our Special Correspondent.)

The journey west did not assume interesting proportions until after Ogden was passed. About an hour's ride from this place brought us to the Lucin cut-off on the Southern Pacific, where the train crosses the great Salt Lake over a trestle. The lake at this point is twenty miles wide. Four miles from either shore the road bed is filled with rocks, but for about twelve miles the train passes over this marvelous engineering work, with the trestle for the distance being entirely surrounded by water. In the early morning the mountains at either end of the lake present a beautiful view. Once across, the journey into the desert state of Nevada begins and the tenderfoot wool buyer, as he views towns along the line, would not require much coaxing to throw up his job and return home. This desert is viewed all day and in inky darkness we alighted from the Pullman for a first dip into the wild and woolly west. Stumbling along through the darkness towards the hotel, escorted by a man who confidentially informed me that he intended to open a stud poker game in the hotel the following evening, we entered the hotel office. Looking for the customary smiling clerk, he was discovered behind the bar serving drinks to a crowd of dangerous looking and roughly clad men. After their thirst had been satisfied, the register was slapped on the bar and tossing over a key he cheerfully said, "You will find the room down the hall to the left." Looking over the assemblage I discovered the roulette wheel in full operation in one corner of the room, in another a crap game, and a crowd playing solo, a popular western game, for the drinks. Fully expecting to be followed through the door by a bullet, I went along the hall to my room and was much relieved to find myself behind a locked door. To my surprise I found a clean bed and a good room. Looking over the same ground in the morning I was again surprised to find no guns on the men and everyone cordial and harmless, armed with nothing more formidable than sheep shears.

A first visit to a shearing pen is of great interest. As one approaches the bleating of several thousand sheep is a strange sound to the unaccustomed ear, and makes one think of a large family of children in distress. The shearing pen is divided into sections, each section large enough to enclose about eight sheep and the shearer. When the pens are filled, the captain of the crew gives the signal and all start work. The sheep is caught by either hind leg and thrown on its side. The shearer then stands the sheep on its haunches between the shearer's legs and starts his shear at the belly, shearing up and down, then working around the sides and back. The fleece when removed is tied quickly and thrown on the floor and from there tossed into the car which is drawn to

the packers who tramp the fleece into the sack. After shearing, the sheep are marked with the owner's brand. Paint is used for this purpose.

A few days later when the cuts made by the shearer are healed, the sheep are dipped. This is to prevent or cure scab. It is done by forcing the sheep to swim for about two minutes through a deep trough filled with a hot solution of tobacco and sulphur or lime heated to a temperature of over 100°. After being allowed to dry the sheep are started to the range amid the barking of dogs and the rattle of tin cans filled with stones. The herder follows along with his camp outfit and

THE ROSWELL TRADING STATION

grub strapped on the back of a burro, and in some places an extra burro is taken along, carrying two casks of water lashed on either side of the pack saddle.

The sheep camp at lambing time is a very busy place and this is the most important period of the year for the sheep man. As the lambs are dropped, the men in charge have to see that the ewe will acknowledge her offspring and not walk off and leave it, as is often the case when the feed is not good. When it is seen that a ewe is thus disposed, the lamb and the ewe are placed together in a small pen and kept there until the ewe concludes she has a family that must be provided for. This sometimes takes several days, but once the ewe acknowledges the lamb, she can pick it out of a thousand and the lamb also knows where it belongs.

People who live in a country where water is plentiful do not realize how the sheep men in dry countries watch the water. The person owning the water holes in a district controls the range, because without his permission sheep cannot get the water. In the rainy season when showers come occasionally, it is an interesting sight to see the camp rustlers of the different outfits follow a shower on horseback to see how far it extended and to locate the pools of water, then to hustle off for the chuck wagon and camp outfit to bring them to the water to establish first rights.

An interesting exhibition of the scent of cattle for water was noticed along the railroad at a place twenty-five miles from a station and with no water in sight. The railroad company had a pipe line under ground to carry water from a reservoir 100 miles distant. The cattle could smell the water and forty or fifty of them were plodding along in single file over the pipes they could not see, seeking a leak. Sometimes they found one, but more often not.

In the early morning we embarked on the McDermitt stage for the 90-mile ride from Winnemucca to McDermitt. The stage was small and filled to its capacitty. From my perch on the driver's seat I viewed all day the dusty hills and swallowed quantities of alkali dust. About noon we pulled up at a station for lunch and a change of horses. At this point there was a new mining camp and one drunken miner inquired my business with much profanity, and was disposed to be troublesome, until some of the sane men ordered him to be quiet and not try to make a show of strangers in camp. As I learned several days later, a singular thing happened to this troublesome miner. His team came into camp minus the owner. He was searched for and found some miles away with his throat cut and unconscious. I was glad not to be obliged to stay long in this locality.

Continuing on our way through a large

valley where the smell of petroleum, as yet undeveloped, was very marked, we arrived at Tent City. As we approached this place the sound of a phonograph was heard playing a national hymn. The city consists of two tents in the desert, twenty-five miles from other habitation. The regular supper

MEXICAN SHEARERS.

of Frijoles, canned meat and coffee was soon produced and justice done to it. Leaving this place we entered a canyon about dusk and a little later it was as dark as a pocket. So dark was it, that the horses could not be seen and the driver, evidently to impress the tenderfoot, sent them along at a gallop. It was a bit like flying through space. From somewhere on the left the sound of a mountain stream could be heard breaking over the rocks, this with an occasional dash across a ford was anything but comforting, and it was a great relief to land at last at the darkened hotel about 1 a. m. and turn into bed in a room with four or five sleeping strangers. At this point ten days was spent driving to the different ranches. At one place the shearing was done by a crew of Piute Indians. They did not do as good work as did the Mexican or white men, but charged less, which was the principal attraction. On the return trip we passed a family traveling across country in a prairie schooner. This was a large covered wagon in which there was evidently a stove as the stove pipe showed through the canvas. Frying pans and kettles were swung under the wagon and at one side was lashed a keg of water. The male members of the family were walking, while the team was driven by the mother and at her side were two small children, one of whom held the family cat.

The open gambling of Nevada is simply nauseating after the novelty of this sort of thing wears off. No matter where one turns there is the gambler with his game of chance. Roulette, stud poker, craps and twenty-one seem to be the leaders. Occasionally the gamblers get some high play, but more often it is with the man who risks his last dollar.

A load of wool from over the mountains comes into town as a mule on a wagon and

MILKING GOATS. MILK FOR THE DOG.

trailer drawn by twelve or fourteen horses with the driver seated on the back of one of the pole horses. The driver is armed with a long quirt and is quite expert in hitting any one of the team that is not pulling his full share of the load.

In some parts of the West the wools are sold by sealed bids. The general terms of sale are agreed upon by buyers and sheep

men. These generally cover the amount of tare to be allowed on each sack, percentage of tags, allowance for buck fleeces, and whether bids are to be made in fractions of one-quarter or one-eighth of a cent. The seller always reserves the right to reject any or all bids. Each clip is offered separately

MEXICAN COOKS.

and sample bags are opened for inspection. After each buyer has examined the wool the bids are written out and handed to the owner, who opens them and decides. In sections where there are no sealed bid sales, the buyers are obliged to make many long drives over the rough country to buy the wools privately. This entails much hard work and discomfort with poor food and short supplies of alkali water.

The buyers when off duty are a sociable lot and when there are a number at any one point there is usually something going on. They hunt pleasure in groups and swap more or less information. It is not expected of one to tell all he knows, but there are many little bits that can be given out which will save others time and money. The man who stands out from this system is usually marked, and although not much is said about it, he finds himself soon in a class by himself. Sheep men seeing the buyers together immediately figure that combinations are being made against them. Their idea of the proper department for all competitors seems to be that they should draw guns and shoot on sight.

In active seasons when large volumes of wool are bought quickly and apparently with little or no examination, it is hardly to be wondered at that the wool houses find difficulty later in figuring themselves out whole on a dull market. It is a wonder how they can go on year after year with these methods and also the occasional custom of buying on the sheep's back. The latter method in itself is a killer in the long run. Some very costly lessons in this respect are apparent this season.

While the sheep are being shorn the owners are willing the wool should be handled as much as desired, but once in the sacks they make a fuss about having them cut. The buyer is forced many times to make his estimate through small holes in a few bags, which is neither fair to the buyer nor to the seller.

THE INGRAHAM RANCH.

For the past few years contracting wools on the sheep's back has been one method of securing the clip. This has been done on a large scale, and like all gambling transactions, sometimes wins, but in the long run seems to be a losing game. It is one of the methods for the few larger wool houses to secure control of the small domestic clip. If the market has been favorable and wool

contracted as in 1909 at low figures, the large firms see to it that no uncontracted wools are sold too cheap. This is accomplished by going into the unsold sections and either paying high prices or making high offers to prevent others from getting wools that will compete with the contracts. This works all right at times but in 1909 was overdone. The protecting purchasers probably overlapped the contracts and showed results on the wrong side of the ledger.

In January, 1910, contracting was done in Utah, Idaho and Nevada at prices current. After several million pounds had been secured the market showed signs of weakness and the operations ceased, but not until several had placed themselves in line for large losses. The market declining up to shearing time, the contractors took the wools on their contracts as delivered, although at the date of delivery they showed a loss of 4 to 5 cents per pound, with possibly a further loss later. Contracts were made in Nevada at 17 to 19 cents and when shearing began many of the early shorn wools were shipped East on consignment with an advance of 14 1/2 cents. Even this did not look safe with 2 cents for freight and 1 1/4 cents for commission. Some went at a guaranteed basis of 16 1/2 cents while many of the larger clips were piled up in the desert for many weeks, exposed to the weather, awaiting a better market price and later were moved on a basis of 55 cents.

At times it is somewhat of a puzzle to know for whom wools are being bought. A buyer may be buying for his house, or for a joint account for two or three dealers to lessen competition. Buyers for the others interested may be on the ground bearing down on the market. There are some sections where but one buyer will enter and get wools at nearly his own price. The others keep out by special agreement and it may be that the wools on arrival at the seaboard are divided in proper proportion. In other places it is well known that sheep men secure loans from the dealers with the understanding that the wool concern loaning the money has the option of taking the wool at the best price offered by any competitor.

(To be continued.)

COST CALCULATING FOR BROAD SILKS.

BY JAMES CHITTICK.

(Continued from October.)

Having now the size, cost and quality of the silk, its drainage after throwing, and the number of ends required, including the selvages, the weight of the warp can be figured, but in this weight an allowance must be made for the take-up of the warp in weaving. This will vary from, say, 6 per cent. for an ordinary eight shaft satin to 10 per cent. for a 120 pick taffeta. It is well to include in all standard calculations a uniform allowance of 10 ten per cent. on this account, and, if close figuring on goods of less take-up is to be done, due allowance can subsequently be made.

It may be noted here that all cost sheets should be based on the raw silk weights, never on the dyed silk weights, and always on the finished length, unless the goods are intended to be sold unfinished or undyed in the grey. On two or three beam jobs there may be a different take-up to figure for each.

In calculating the length of the filling picks the width of the cloth in the reed must be taken. Careful tests, on yarns of average size, show that it is a trifle in excess of this, but so little as to be negligible. In the case of checks and plaids, where the change of shuttles causes the floating of threads along the selvages, this lost length should be allowed for if considerable.

The percentage of waste to allow for the manufacturing deserves much thought. Waste must and will be made and if attempts are made to limit it too strictly the extra labor and loss of production may well amount to much more than the waste saved.

There is not only the waste material actually collected to consider, but such attendant losses as come from remnants of silk remaining on bobbins, etc., which, of course, are then worth far less than their new cost, or material that may have been injured in dyeing, or which may have deteriorated in stock and which has to be sold or worked up at a loss.

The customary method of figuring the waste on yarn dyed goods is to add 4 per cent. to the calculated weight of warp, and

7 per cent. to the filling, an average of say 5 1/2 per cent.

In well managed mills, where long runs on comparatively few fabrics are made, this waste allowance may be cut in half, but when the production is much broken, or the work very complicated, the above figure may not be too high.

On raw silk warps for single weaving an allowance of 2 per cent. waste should suffice and for cop filling about 5 per cent. This latter looks high, but it is frequently made, and more particularly on high speed looms, the waste generally increasing with the speed. The waste should certainly be less than the calculation and the amount made during a season should be checked back carefully to see how it has compared with the estimates. When considering the waste question the weight of the tubes on which cop yarn is wound must not be overlooked. These are usually charged for as yarn, and the weight of material to be ordered must consequently be proportionately greater. This can appear in the calculation either as an increase in the weight of the filling required or as an addition to the price per pound, the former being preferable.

The weight of the tubes on which imported schappe or spun silks, and fine cottons, are customarily wound, for use in silk shuttles, will average about 4 per cent. of the total weight. The tubes used in domestic cops of a size, say, 6 inches long by 3/4 inch diameter, and in counts averaging about 1/25, will weigh about 7 per cent. of the total. Some spinners use a tube as heavy as 8 1/2 per cent. or over, and occasionally some one uses a thinner and lighter tube, but these are apt to break. The figures of 4 and 7 per cent. as noted above will be found to be all right in practice. If yarns are bought in any other form, when there is a tare that is being paid for, allowance should be made.

We now come to the consideration of the allotted labor. This covers the processes of winding, warping, doubling, quilling, drawing-in and twisting, weaving, picking and cleaning. The question at once arises as to whether the figures set down should cover only the rate per pound or yard paid to the operative, or whether they should include the other labor expenses of their own departments, such as overseer's and mechanic's wages, bobbin carriers and sundry other help. Both methods have certain advantages but the writer prefers to set down the exact rates paid to the operatives for the specific work, and to include the auxiliary labor in the General Expense item. By following this method any changes made at the mill in the established piece work rates would be at once apparent in the calculations.

It is convenient to figure all costs on a basis of 100 yards of finished cloth, as a glance at the footing shows not only the cost for that amount, but also for the single yard.

Working on this plan the cost will be figured for 110 yards of warp to take care of the take-up in weaving, and the warping will be charged against a similar length. As warps are most frequently made 300 yards long it follows that the twisting expense would have to be divided by three to get the proportion for 100 yards, or if of different lengths then by whatever divisor might be proper.

The beaming may be figured in with the warping or it may be put into a separate item. It is tripling. A certain amount of drawing-in, or entering, may be proportioned with the twisting rates and an average figure arrived at.

After goods are removed from the loom and handled a little they creep up in length, a taffeta shortening up about 1 per cent. and an eight shaft cotton back satin at least 3 per cent., or more. When the goods are stretched out tight again in the finishing this length is regained. Many people think that this is an actual stretching of the cloth, but such is not the case. The loom tension is very great and the finisher cannot exceed it without damage to the fabric.

When goods are offered for sale unfinished, or in the grey, this must be kept well in mind, for the 100 yard calculation on the satin will then yield only 97 yards of undyed cloth, and the cost must be divided by 97 to get the real cost per yard in the grey. This is often overlooked. The buyer always calculates on making a substantial gain in the

finishing, and the seller does not always realize that he is presenting him with the cloth so gained at his own expense.

The weaver and the picker are paid on the shorter measurements referred to, and as the minimum shortening is about 1 per cent., the cost sheet should carry a change for weaving and picking 99 yards for the 100 yards of finished goods.

When goods are to be clipped on the back, or along the selvage, a separate item may be made for it, or it may be included in the price for picking. Sometimes, as in the case of plaids, this work is done by the weaver.

The light colors in certain lines of goods will require cleaning. If, for example, every fifth piece needed to be cleaned a figure of one-fifth of the cleaning price would be applied to the cost sheet.

Whether the rates paid for winding, doubling and quilling are on a dyed weight basis or not, and they generally are, they must be reduced to a raw weight basis and in this form included in the cost.

Quilling is generally paid for on a day work basis, but it is fairly easy to figure out what the cost comes to on the raw pound of each class of material.

The weaving prices must be most carefully considered as they must be just high enough to enable an average weaver to earn a fair day's pay and no higher. Hardly any two similar fabrics produce alike. The weaver earns the price per yard multiplied by the product per week, and that product depends greatly upon the quality and preparation of the raw material, the continuity and steadiness of work, and the ability of the management. Deficiency in any of these respects will unquestionably compel higher weaving wages sooner or later.

When printed warps are to be prepared the figuring is somewhat complex. The printer's charge being based on the yards of warp, the calculation will have to be for 110 yards. Then the weaving in of the few binding picks in the warp, every yard or so, must be paid for on the same length. The time of the loom so employed, which otherwise would be doing useful work, must also be charged against the fabric. The material used in the binding picks is another item, and then there is the re-twisting and the re-beaming of the warp.

We now come to the finishing, printing and piece dyeing of the fabric, generally done by outside firms on commission. The costs for these processes are quite easy to arrive at, but in the printed and piece dyed goods great vigilance should be used to see that the proper yardage is returned. Most goods shrink in width, and many do in length, in the dyeing, tussahs particularly so. Fabrics made from tussah warp lose in length from 3 to 10 per cent., the heavier cloth losing the most. The dyers must always be cautioned to hold them out to the utmost, or otherwise they may lose more, but he cannot overcome all of the natural shrinkage. The result of such a shrinkage in a given case may be that the manufacturer would only get, say, ninety-five yards of cloth instead of a hundred, the total cost would have to be divided by the smaller yardage to get at the real average cost.

The shrinkage in width and length of all goods containing wool in any form must also be closely watched.

We have now arrived at the last great item on the cost sheet, and the most vexed one, that of the general expense. This must include every expense of every kind not otherwise provided for. It carries the interest on capital invested and on borrowed money; a proper sum for depreciation on machinery and on buildings; the cost of the power, including the engineer and fireman; salaries of partners or officers; salaries of mill superintendents, foremen, office force, loom fixers, mechanics, designers and a number of other employes; the cost of repairs and maintenance; fire insurance and accident insurance; the expense of sampling, both for labor and material; the cost of mill supplies and mill expenses of every description, and such other additions for labor as experience may show, when the allotted labor on the cost sheets does not sufficiently provide for the money actually paid out annually. This principally applies to the

drawing-in and twisting costs and to the warping charges. In a mill of, say, five hundred looms, this general expense may vary between $200 and $300 per loom per annum, according to whether the production is all plain or mostly fancy.

If desired, the designing and sampling expenses may be withdrawn from the general expense account and allotted against the individual fabrics, a very logical course, but a most difficult one to follow with any degree of accuracy. Into this expense comes the cost of the foreign sample collections; the salaries of all designers, card cutters, pattern weavers, and other employes in that department; the patterns bought from outside designers and the designing and card cutting done outside; the interest, depreciation on the machinery and the rent and expense for the space occupied, for the card cutting, jacquard and other necessary machinery; the large amount of wages paid for sample weaving, warping, entering and twisting; the very considerable amounts of raw material used in the sampling, and the waste made; the alterations and repairs to jacquard harnesses, machines and other paraphernalia; the expense of building and entering fancy shaft harnesses of every description, and collateral expenses that a plain goods mill knows nothing about.

If, in the average mill making many plain goods and few fancy goods, these sums were scientifically apportioned, it would often be found that the fancy goods business was being done at a loss and that the plain goods end was carrying it. In other words, that the plain goods were being over-costed and the fancy goods under-costed. The conditions in each mill will determine which course seems the best to pursue, but, in this case, I am assuming that all these expenses are covered-in under the general expense account. Interest should be figured at 6 per cent., and annual depreciation of machinery at 7 1/2 per cent. of the new cost. Boilers and engines should have 10 per cent. of the new cost written off annually and good brick buildings, 2 1/2 per cent.

To express properly the general expense on the cost sheet it should be remembered that the most of it goes on whether the mill runs full or is idle, and what it will amount to in any individual case will depend entirely upon the annual production. Many manufacturers take a percentage of the total of the other costs to cover this item, a most misleading and erroneous method. While the expense is fairly constant, yet it will, in that case, be figured higher or lower according as the silk market rises or falls.

What the writer considers to be the best way of handling this matter is to charge each producing loom unit with its share of the annual expense. Suppose that the general expense of a 500-loom mill is $120,000 annually, and that experience covering some years shows that the looms run on an average 80 per cent. of the time. This is equal to 400 looms running all of the time and therefore would be $300 a year to be earned for expenses by each loom, equal to a dollar a day, or six dollars a week. This of course can be modified by charging looms on fancy goods more, and those on plain goods less, or for wide goods more and for narrow goods less, but the total earnings on this account must be sufficient to offset the total expense. Anything figured as profit should be a clear gain over all expenses, interest included.

If six dollars a week is charged on a loom, and the product for a fabric being calculated was estimated as sixty yards a week, a sum of ten cents a yard would be set down against the general expense. If the product is a hundred yards a week the expense would be figured as six cents.

Some manufacturers figure for expenses a percentage of the weaving cost, which generally amounts to somewhat the same thing, as the weaving wages are largely based on the production. The other way is more exact and consequently better. If the foregoing instructions are followed, a manufacturer may feel fairly certain that the cost he has figured his goods at, f. o. b. New York, and without selling charges added, will be fairly near the truth. If all manufacturers would take pains to learn how to cost their goods properly it would be much easier to do business at a profit than it now is, as many goods are sold too low from a lack of knowledge of their real cost.

Fancy goods, if late, and if cancelled in

consequence, are subject to heavy losses and some fabrics are so difficult to make perfect that many claims and other losses are certain to be incurred on them. In such cases an extra large profit should be exacted on the goods or, if desired, something can be put into the cost sheet to cover these prospective losses.

It is highly desirable that a well considered cost sheet form should be used for all calculations so that if any items are omitted it will be at once apparent, and by the use of which mistakes and oversights can be reduced to a minimum. I present herewith a form of my own devising, which is comprehensive in character, clear and explanatory as to details, and which works admirably in practice. There is a place for everything and enough space for the details of the most complicated fabrics. A simple calculation has been worked out as an illustration along the lines previously explained. The "Selling Cost" is the lowest figure at which the goods can be sold without loss. I will take pleasure in answering any inquiries on the subject in case I have not made myself clear, and will also be glad to forward copies of this cost sheet to anyone who may be interested.

TAILORS' INFLUENCE ON THE ENGLISH WORSTED TRADE.

BY REGENT.

The private tailor has been thrust into a second place in America and manufacturers who have not had an opportunity of examining European conditions at first hand may not realize how much the private tailor is responsible for in the Old World. Considered as an institution, the custom tailor exerts a controlling influence on the fortunes of worsted manufacturers and it may be useful to show in what ways. The custom tailor is comparatively a small trader who has necessarily to keep a quantity of stock and who is expected by his customers to give credit. He is too small a buyer to deal directly with manufacturers and so the existence of those tailors in large numbers implies the existence of a middle class of jobbers or cloth merchants.

The merchant buys from the manufacturer, cuts up whole pieces to suit the requirements of his trade and brings selections from a large number of mills within the small tailor's compass. The merchant—one would say—has the natural duty of financing the tailor, but cloth merchants have many uses for their money and in practice the manufacturer making the higher classes of goods has to finance both merchant and tailor. The result is seen in failures like that of James Platt of London, from whom textile manufacturers want $250,000. A sum of $12,000 is wanted by one Hawick firm alone and sums $6,000 to $7,000 by several Huddersfield houses.

Naturally, when a merchant gets six to nine months' open credit and then pays perhaps in bills, his liabilities are considerable at any given moment. This curse is one of the penalties of depending on the manufacture of cloths to suit the private tailor. Failures are frequent and severe and it is not certain that the manufacturer who has to bear the brunt of them is always compensated by high prices.

The cloth merchant, having many traveling men and a great many customers, wants long patterns delivered far in advance of the goods and the preparation of these is excessively expensive. Again the private tailor and his companion the merchant want a great number of separate styles. Every town has one or two tailors who buy only one suit-length or trouser-length of one number, and who require that this number shall be confined exclusively to them so that their customers may not have the annoyance of finding that anyone else in the town has a suit of the same design and color as themselves. The inevitable result is the multiplication of colors and designs in the mill, the reduction of production, and the addition of vast expenses in designing, twisting-in and dealing generally with small lots. The styles have to show a difference, but also they have to bear a resemblance to the limited number of colorings and effects that are in fashion at one time. There are firms spending $150,000 each in patterns and designs. We find men with 30 to 40 looms, not exclusively in the fancy trade, with 400 to 500 patterns per season. Obviously, the private tailor is a source of great expense to the mill alike in

cost of work and in interest on money. To a few manufacturers of large capital and technical aptitude he is a source of considerable profit. The $2,500,000 left lately by a member of Martin, Sons & Co., Ltd., Lindley, is not the only fortune made by that firm in its catering for the wants of the private tailor.

Even sloppers fail and trade with the second and third-rate London and Manchester cap and garment makers is distinctly dangerous, but the factory clothier does not usually owe for his cloth for a whole year and the first-class houses are wealthy. The manufacturer in dealing with clothing factories has to look to a large turnover rather than to good prices as his source of profit. The clothier wants plain serges at about 25 cents, tweeds up to 60 cents and worsteds around 70 cents. The fancies he requires are imitations of those which the highest-class custom tailor was selling one or two seasons before and the smarter the imitation the better.

The factory clothier buys direct from the mill, or through an export commission house should he reside on the Continent. He is less particular about small defects in the fabric and small deviations from shade than is the custom tailor. He buys largely when he buys at all, but manufacturers find him just as difficult to see and do business with as the cloth merchant is. He buys more closely than the tailors' merchant and does not tell callers that he wants Martin's cloth, or Learoyd's cloth, and won't look at cloths at less money that will serve the same purpose. The largest tailors' merchants are not so particular as to the price they pay as about the certainty of getting their own profits and this they can always get on cloth from the best-established Huddersfield mills. The slopper wants value and wants delivery and for the latter reason places business preferably with large firms.

After this necessary digression it may be well to add that it is the private tailor rather than the factory clothier who makes London a world's mart for high-class woolens and worsteds. London produces none of these goods, but London is the Mecca of European tailoring. Its private tailors set the seal of fashion on the products of the mills and London is the home of the leading English tailors' merchants and the place to which all the merchants of the Continent come for the purposes of completing their collections for the season. Continental mills produce many good cloths, but a merchant who is going to satisfy the fastidiousness of private tailors needs a wider diversity of choice than can be made at home. He must have variety and as numerous English and Scottish and two or three Irish mills have laid themselves out for the production of a great number of styles every season it follows that British cloths of the best quality are being sold more or less by every tailors' merchant in Europe. These fine goods which are bought without much reference to price find their way into countries where cheap cloths never penetrate. These fabrics are the ones which make and maintain the reputation of English woolens and worsteds and in that effect the private tailor plays his part. He is not the author of the useful reputation that English cloths enjoy abroad, but he is the instrument of its being and British manufacturers are scarcely equipped to dispense with him. From what has been said it will be seen that his existence is still not an unalloyed advantage.

HYGIENIC APPARATUS IN ITALIAN MILLS.

From Uhlands Technische Rundschau.

(Translated from the German by the Editor of the Textile World Record.)

The carding department of the Fara d'Adda Mill, shown at Figs. 1 to 5, occupies a room 289 feet long, 39 feet wide and 21 feet high, in which are installed 32 cards completely enclosed. The removal of the dust as soon as it arises, Figs. 12 to 14, is effected according to the Recknagle system by means of covers and conduits. In this way the work of transporting the heavy waste by the old methods is avoided. Figs. 12 to 15 show the details of the installation. The dust covers and pipes lead to the large pipe, e, which is in turn connected with the subterranean conduit that is a part of the ventilating system. A three-cornered cap is placed over each doffer and connects with

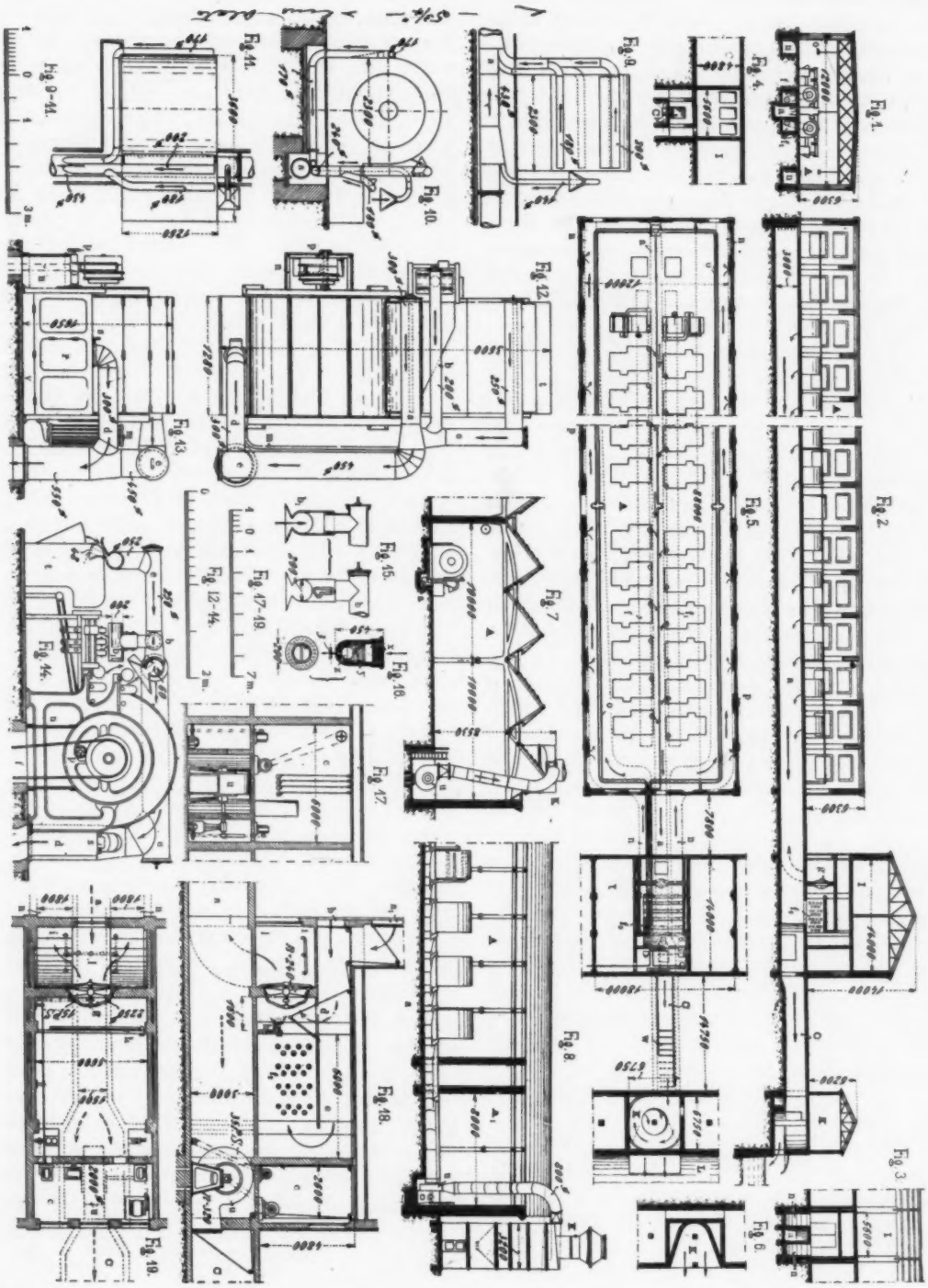


Fig. 1.
Fig. 2.
Fig. 3
Fig. 4.
Fig. 5.
Fig. 6.
Fig. 7
Fig. 8.
Fig. 9-11.
Fig. 12-14.
Fig. 15.
Fig. 16.
Fig. 17-19.
Fig. 17.
Fig. 18.
Fig. 19.

the pipe, a, by means of a slit along the entire length. The cap swings on hinges attached to permit of access to the doffer without interference with the piping. The dust from the drawing machines is carried by the pipe, b, Figs. 13 and 14, to the main pipe, e. The cover, b^1, can be raised in order to reach the rolls. The pipe, D, carries away the dust from the interior of the card. Slides are provided for isolating the cards from the circulating system when necessary, as for example, in case of fire. Openings are provided so that the heavy waste can be removed from the lower part of the machine.

The drawings show the method of driving, the hand wheel, P, connecting with the belt shipper, and the method of protecting the belts and gears. The Recknagle system used in this mill differs very little from the Sulzer system described in the previous article. Recknagle, however, used water as well as steam for moistening the air. Figs. 2 to 6 are plans of the heating, ventilating, moistening and dust removing apparatus apart from the mill construction. Fresh air enters through the opening, a^1 and b, Fig. 18, being regulated by valves which are adjusted from the room, c. In cold weather the valve, d, remains closed and the fresh air drawn by the ventilator, g, must go through the passage, e, and heating chamber, f^2. Before the air reaches the ventilator it is moistened and heated by steam from the pipe, h. In very cold weather a steam heater, o, installed in the card room, is used. In this case the entire consumption for a temperature of 56° F. and a relative humidity of 75° is estimated at 3,000 pounds per hour. In summer when the heater is not in use, the fresh air passes directly through the pipe, d, to the ventilator, from which it passes to the air moistening apparatus, I. From this chamber the air passes in two currents to the card room, A, through wall openings, p, 8 feet above the floor.

The ventilator, g, is 7 feet 6 inches in diameter and is driven at a speed of 240 revolutions per minute, requiring 15 h. p. The subterranean conduit, a, in the card room, A, through which the dust is carried, leads to the building, I, in which is placed an exhauster, u, 6 feet 6 inches in diameter, running 320 revolutions per minute and requiring 35 h. p. This exhauster delivers 3,350,000 cubic feet of air per hour. Behind it in the conduit, C, the dust is moistened by 30 water jets, w, in order to make it settle in the chamber, K. The now nearly purified air is passed through the water curtain, L, where all the dust is removed. All the regulating apparatus is located in the room, c. The atomizer for the moistening pipes is shown on a small scale at Fig. 19. The water enters through the spiral shaped canal, x, on its way to the circular chamber, z. Here it acquires a rotary motion and finally reaches the air in a finely subdivided state, being in the form of a thick fog. Pontiggia writes that both this and the installation described in a former article give good results as far as hygienic conditions are concerned, but from a technical standpoint the installation at Cassano is to be preferred.

For example, the cards at Cassano are not connected with the piping so as to interfere materially with the care and operation of the machines, and thus the cleaning and repairs can be accomplished without difficulty. Moreover the moistening of the air by steam in summer cannot be carried on to the desired extent owing to the resulting high temperature. This difficulty is overcome in the system at Fara owing to the use of water. The carding department at Fratta Maggiore, near Naples, shown at Figs. 7 to 11, is installed in a shed 64 by 100 feet and comprises 12 cards with the necessary preparatory machines. As shown in the illustrations, the dust is removed by a system separate from the ventilating, heating and moistening apparatus. The reason for this is not stated, but may be found in the peculiar climatic conditions of Naples.

The dust is removed from the card at four points: 1, over the doffer; 2, over the feed rolls; 3, at the top of the card; and 4, from the interior over the shaft of the main cylinder. The last named point was selected in order to remove the dust from the working rolls without interfering with the falling of the heavy materials to the bottom of the card. Pontiggia praises this installation because of its hygienic qualities, but criticises it because of the difficulty of operating the cards.

CARD GRINDING.

From the Grinding and Mounting of Card Clothing recently published by Dronsfield Bros., Ltd., Oldham, England.)

(Continued from September.)

Care of the grinding tools will repay the mill and the manufacturer will have the satisfaction of knowing that if the carding happens to be wrong through some fault which can be rectified by the grinder, he has a first-class, up-to-date apparatus to fall back upon.

EMERY FILLETING.

Emery filleting is grooved and plain; the plain fillet is used to but a slight extent.

The Dronsfield grooved emery fillet, used the world over in all climates, is sharper, more regular in its action, and grinds a better point than plain covering, and in a little over half the time. The reason is as follows. The emery grains are of the angular type in both cases. If these grains were simply dropped on the cemented surface, the fillet would simply be plain covered, but in the truing up process the sharp points of the grains would be forced down and the surface would become an irregular mixture

FIG. 28.

of sharp points and flat sides of grains. It may be computed that 50 per cent. of the best cutting points are thus buried.

In grooving, the sharp angular points of the grains are forced up into grooves of such a pitch, that as nearly as possible one grain occupies a line; the result is a saw toothed covering, Fig. 28. For all practical purposes two pitches of groove are sufficient, a fine pitch for 40s and 7s with 16 grooves per inch, a coarse pitch for 6s and 5s with 8 grooves per inch. In this way the full obtainable cutting power of every grain is brought into action, with the further advantage of having each line of grain acting upon a given quantity of card teeth. The filleting is so trued up, that in testing the filleting mounted upon a revolving cylinder, a tool sliding upon a true slide will touch the top of every groove or ridge. This test is applied to all our filleting previous to packing for shipment.

Emery filleting is made of any size of grain desired, but the standard grains are 40s and 7s for hardened and tempered steel; 6s and 5s for mild steel. The former are the finer, and the latter the coaresr grades. The filleting is grooved for practical reasons, and not to please the eye. A fine grain of emery grooved with a coarse pitch will look much better, but it will not be nearly so useful, inasmuch as the quantity of grooves determines the grinding power of the fillet, and

FIG. 29.

FIG. 30.

in grooving with the pitches previously mentioned, the full grinding capacity of every grain is obtained. On the other hand, with the plain filleting, many grains are lost in the interior of the emery surface.

MANIPULATION OF EMERY FILLETING.

Practical Hints: Considering the widespread use of emery filleting, a few hints regarding its manipulation would probably be acceptable to carders:

1. Keep the fillet stock a dry room. As now made it will retain its flexibility without damping.

2. The fillet should be simply wrapped on the rollers; no glue or cement is necessary.

3. Mount the roller in steps or brackets to recover, and attach a handle to one end. Let one man turn while the other stretches and guides the fillet. The frame, Fig. 19, is well suited for this work, and one man can manage the recovering; the card-mounting head stretches and guides the fillet to its position.

4. Cut one end of the fillet to the width of the slot in the end of the roller, Fig. 29, pass through the slot and secure by the clamp; then wrap, keeping the laps close together, until the end of roller is reached. Before passing through the nearest of the three slots, Fig. 30, secure the last lap temporarily to the flange by means of a small hand vice; then pass through and secure.

5. Trim off the overhanging edges with a

chisel or half-round file; the roller is now ready for grinding.

The same instructions apply to the discs of emery wheel grinders, but being only small, they may be covered on a bench.

THE SAECHSISCHE MASCHINENFABRIK OF CHEMNITZ.

The announcement that the Saechsische Maschinenfabrik, Richard Hartmann, the largest textile machine manufacturing concern in Germany, is to enter the American field, makes the history and standing of this company of interest.

The founder of this great industry was Richard Hartmann, a poor mechanic, born in 1809 in Alsace near Strassburg. With great foresight he recognized the future of textile machinery in the Eastern part of Germany, and after working in various places he landed in 1832 in the picturesque old town of Chemnitz. Possessed of great executive ability and an iron will, he applied himself to the building of textile machinery, and attained a pronounced success. After his arrival a man named Haubold, the only Saxon textile machine builder of his time, hired this broad-shouldered, energetic young mechanic and found him exceptionally useful in his shop.

In 1837 Hartmann left the anvil in the smoky shop of Haubold and started out for himself. Using all the capital he had, he opened a small shop, making woolen spinning machinery, employing two assistants and one apprentice. While making machines, he devoted all the time he could to developing his own idea of an improved spinning mule. Some of the woolen spinners around Chemnitz smiled disparagingly, and others were enthusiastic about this silent southern German, building spinning machines in Saxony. Such an invention would be of great importance, but how could this man, Hartmann, improve machines already built by the great mechanics of Alsace? Those who sympathized with Hartmann's work were delighted when his mule was in working order and producing better yarn and in larger quantity than could be spun on other machines. His fight was won and his success was assured.

He designed a continuous process of preparation for woolen spinning and in 1859 was in the very front rank of textile machine builders. He can be regarded as the father of the great woolen industry of Germany and one of the great machine constructors of his age.

In addition to textile machines, he built in 1870 locomotives, steam engines and tool machinery, the business being of such proportions that it was necessary to form a corporation to carry out his ideas. The plant was named the Saechsische Maschinenfabrik or the Machinery Plant of Saxony, and the business continued with the same ideas and vigor as before.

TRADEMARK.

Richard Hartmann died in the year 1870. He was a man of great ambition and accomplished much for the benefit of the German textile industry.

The Saechsische Maschinenfabrik carry out the original ideas of Richard Hartmann and conduct their extensive business on the same principles as laid down by the founder. This plant is today one of the largest in Germany, employing 5,000 mechanics and 1,000 engineers and clerks. The motto of Richard Hartmann is kept before the minds of every worker connected with this plant, "Do Everything Better than Before." There are many instances where three generations, father, son and grandson may be found working in this plant. Their trade mark is the smith, a symbol of the mechanic.

The Saechsische Maschinenfabrik manufactures today a great variety of machines in their textile department. They manufacture

spinning and preparatory machines for the woolen and worsted trade, Bradford System, especially constructed for ladies' wear, men's wear, buckskin, flannel, carpet, paper felts, shoddy, mungo and for knitting purposes.

The high development of the German cotton waste and silk manufacturing industry is largely due to Richard Hartmann who supplied the manufacturers of this line with his waste preparing and spinning machines. These machines enable the German manufacturers to make a marketable article from the lowest grade of wastes. Their machine for felt hat manufacturing and their twisters have a high reputation abroad.

They manufacture looms for every purpose, including jacquard looms, upholstery looms, silk looms of every description, carpet looms for Brussel and Axminster carpet, plush looms for silk and cotton plushes, and asbestos looms for weaving fire-proof stage curtains and stage scenery in one piece in any required width. They also build an extensive line of warp preparation machinery.

The Saechsische Maschinenfabrik made a thorough investigation of American textile conditions before satisfying themselves that they would find a large enough demand to warrant them in entering this market. They found that there are many special fabrics being imported from Europe into America today which are called for by the American consumers and which, on account of the special training required or the special machinery needed, our American manufacturers are not producing, but which they could produce. They believe they will find their opportunity to supply the machines required for these special articles, giving at the same time advice to the manufacturer as to the best foreign methods which will offer assurance of the successful manufacture of the goods. It is in the field of special problems and specialized features offering liberal margin of profit that they expect to find their best opportunity. As they put it, it is not so much to supplant but rather to supplement present equipment in lines which will offer the American manufacturer similar special machinery and methods of the most successful continental manufacturers.

THE CHEMNITZ PLANT OF THE SAECHSISCHE MASCHINENFABRIK

Correspondence and Notes

UPON TEXTILE TOPICS AT HOME AND ABROAD

MANUFACTURE OF SIZED WADDING.

BY GAUL.

(Translated from the French by the Editor of the Textile World Record.)

The ordinary wadding is made of short fibrous material, usually cotton, but it is evident that other textile materials can be used, including mixtures of different kinds. The webbing is made on the card, the fibers being held together simply by friction produced by contact with one another. In this condition the web is very tender and the strength is increased by calendering it, the wadding being passed between very heavy cylinders. Even then the wadding is easily broken and consequently can be made only in narrow widths, not wide enough for bed coverings. Moreover, even if it could be made in wide widths it would not stand the wear to which bed covers are subjected. To increase the strength of wadding some manufacturers apply a thin coating of gum or sizing to both sides. This does not in any way affect the fiber, but enables the wadding to be made wide.

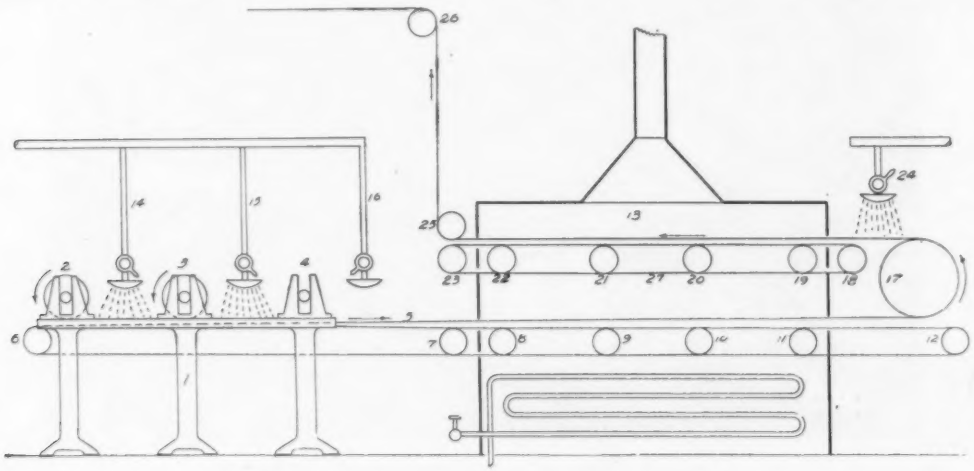


FIG. 1. THE CLARK MACHINE FOR GUMMING WADDING.

Fig. 1 shows the Clark machine used for gumming wadding. On the frame, 1, are fixed the supports, 2, 3, and 4, for the rolls of batting as they come from the card. As the batting is unwound from these rolls it is received on the moving apron, 5, which is carried by the rollers, 6 to 12. The apron, 5, passes through the chamber, 13, in which the air is heated by steam pipes as shown. This chamber is closed except at the ventilator and where the batting enters and leaves it. The ventilator at the top permits the moist air to escape. Above the frame, 1, are placed the nozzles, 14, 15 and 16, by which the gumming preparation is pulverized and thrown in a spray on the upper side of the wadding. The wadding sized on one face then passes through the drying chamber, 13, where the water in the sizing is evaporated. Upon leaving the chamber the web passes over the roller, 17, to another apron, 27, which is guided on the rollers, 18 to 23. This apron carries the wadding under the nozzles, 24, which throws a spray of the sizing material on the other side of the web, which is then carried through the chamber, where it is again dried. Upon leaving the chamber the wadding, which now possesses a considerable degree of strength owing to the coating on both sides,

is guided by the rolls, 25 and 26, to the rolling machine. In this way the wadding is made much stronger than when unsized. For pulverizing the gummy liquid an injector is used. The number of sizing materials vary widely. The following are a few formulas:

1. Boil for 10 minutes:

10 lbs. Water.
1 lb. Wax.
2½ ozs. Carbonate of Soda.

This is the encaustic mixture which is used in the following preparation:

1.9 lbs. Encaustic Preparation.
6 to 8 lbs. Starch.
180 lbs. Water.
½ lb. White Soap.
1.2 lbs. Borax.

These ingredients are mixed at a boil and the boiling is continued for one hour. The mixture should be used lukewarm.

2. Mix:

5 lbs. Olein.
5 lbs. Peanut Oil.
.3 lbs. Stearic Acid.
1¼ lbs. Paraffine.
1 lb. Caustic Soda 30° B.
5 lbs. Water.

The peanut oil and stearic acid can be replaced with 6 lbs. cocoanut oil. The mixture is boiled for one hour in a pressure kier. A thick product called oleo paraffine soap is thus obtained and used in making the following sizing preparation:

8.3 lbs. Oleo Paraffine Soap.
25 lbs. Apparatine Paste.
200 lbs. Water.

THE SOUTHERN TEXTILE ASSOCIATION.

The fall meeting of the Southern Textile Association will be held at Charlotte, N. C., on Nov. 26. The following are the committees that have been appointed to take charge of the arrangements for the meeting: Finance, H. H. Boyd, A. B. Sanders and C. A. Hamilton; Arrangements, J. H. Bagwell, J. D. Buice, W. H. Warner, W. H. Wearn and John W. Fox.

FRENCH WORSTED SPINNING.

By ROBERT DANTZER, Textile Engineer.

(Translated from the French by the Editor of the Textile World Record.)

OILING WOOL.

Oil is applied to wool to lubricate the scoured fibers as a preparation for the succeeding processes to which the material is to be subjected. The oiling of wool facilitates these processes, which nevertheless can be carried on without applying oil to the fibers. Experience has proved, however, that wool that has not been oiled cannot be spun as fine and does not yield as much yarn as when oil is used. Moreover, besides facilitating the succeeding processes, the use of oil results in lessening the amount of waste. The scaly surface of the wool fibers accounts for the necessity of oiling. The oil facilitates the sliding of the fibers on each other, reduces the friction and thus decreases the number of breakages and the quantity of waste. Thus the oiling of wool has the same effect as when oil is applied to frictional surfaces in general. In certain cases when the wool is dry and harsh the fibers absorb oil and become more flexible.

Wool may be oiled with preparations of widely varying composition and without using either acid or neutral fatty substances and without having them saponified. It is enough simply that the lubricating material be unctuous in order to allow the fibers to become parallel and bring the short fibers into the right position. Formerly oil was applied to wool for the purpose of increasing the weight, but this fraud, which is easily detected by washing, is now seldom practiced. To this preliminary reserve concerning the commercial good faith in oiling wool I will add another regarding the inconvenience in using oiling solutions from a technical point of view. Oiling solutions which involve the use of fatty matter, either neutral like the oils, or acid like olein, or saponified, frequently cause difficulties in the subsequent processes of manufacturing by reason of the formation of insoluble compounds. These fatty substances, the soap or the emulsion, being brought in contact with a salt such as that encountered in sizing materials for

example, result in the formation of an insoluble compound causing much difficulty in the dyeing process. Theoretically wool requires about 2 to 3 per cent. of oil, but in practice the required quantity varies with the quality and condition of the fiber. From this it is evident that the oiling of wool, although a very simple process, requires much care. To obtain the best results a composition for oiling wool should meet the following requirements:

1. It should be as soluble as possible in order that it may be easily removed by rinsing in water or by a little scouring.

2. If it contains a fatty matter saponified or emulsified, it should not at the same time contain any substance with which it would form an insoluble soap.

3. It should be neutral, for if it is acid it attacks the metallic parts of the machine, and if it is alkaline or basic it impairs the brightness of the colors.

4. The proportion of water varies widely according to conditions, and is determined by the material to be oiled. An excess of water is liable to cause the card clothing to rust. Generally speaking the quantity of the oiling solution increases as the fibers become shorter, coarser or harsher.

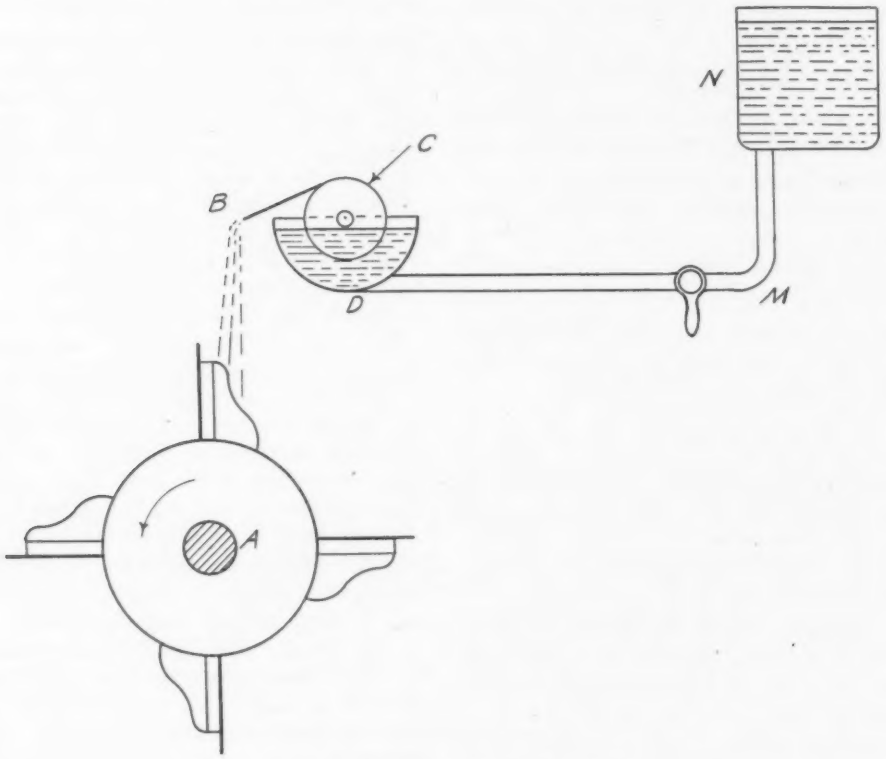


FIG. 1. APPARATUS FOR OILING WOOL.

5. The solution should not deteriorate for a period of three to four months and should in no case become putrid.

6. The composition should be stable and homogeneous, although the substances of which it is composed may vary in density.

The various materials used for oiling compositions may be classified as follows:

LUBRICATING COMPOUNDS.

1. Olein. This material mixes perfectly and gives compositions of which the consist-

ency is maintained for a long time. One objection to it is that when used with soda the emulsion is liable to become clotted. The olein of saponification is distinguished from the olein of distillation. The first, a light brown liquid showing very little sediment, is used in preference to the latter, which is a dark brown liquid with a disagreeable odor and with a large amount of sedi-

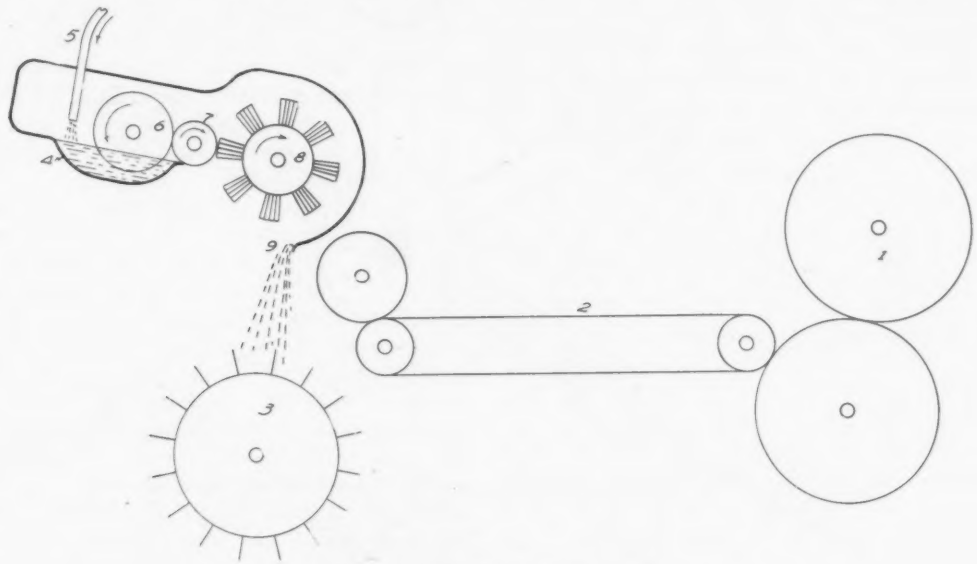


FIG. 2. APPARATUS FOR OILING WOOL.

ment. The olein should not contain mineral acids, which are disclosed by shaking the oil in a small quantity of water. The water is poured into another receptacle and a drop of methyl violet solution is added. If the water turns green the olein contains acid.

2. Mineral Oils. These oils are of two kinds: Russian oils and vaseline oils. The Russian oil with a density of .87 is suited for combed wool intended to be woven and finished in the spun condition. It is not suited at all for worsted that is to be colored as it is very difficult to scour it clean. The vaseline oil with a density of .853 to .879 does not cause the difficulties encountered with Russian oil. It forms emulsions easily in the presence of soap or even the alkalies. It is without odor or color and is insipid. When heated a characteristic odor of petroleum is emitted. As it is free from water and free fatty acids its use can be recommended. Usually it is mixed with vegetable oils in the proportion of one-fifth to one-third.

3. Vegetable Oils. The principal kinds are peanut oils, olive oil, castor oil, cotton oil, sesamum oil and soluble oils. These oils can be used in their natural state in emulsions with white or dark soap, but there is need then of adding linseed oil or lichen, which preserves the viscosity of the solution. Occasionally the oils are treated with a small quantity of caustic soda or chloride of zinc which causes a partial saponification, in which condition the emulsion is maintained without the addition of other materials. The best of the fatty materials are the soluble oils which have the advantage of forming an excellent emulsion when cold by adding a small quantity of alkali, either ammonia, potash or soda. They possess less fatty material, but this defect can be remedied by the addition of a small quantity of castor or similar oil.

4. Animal Oils. Whale oil and the various fish oils are but little used except in the working of jute. These oils leave a tena-

cious odor on wool which is very difficult to remove, consequently they are not used.

SOAPS.

The soaps are of two kinds: One having a base of potash, and the other of soda. We will not here dwell on their well known properties. The soaps should be selected to suit the results to be obtained by oiling. For this reason the olein soaps are used for the mineral oils and the potash soaps for the olein emulsions and the soda soaps for the oil emulsions. In using soaps two difficulties should be guarded against:

1. The causticity should be tested by dropping a small quantity of nitrate of mercury on a fresh piece of the soap. An excess of alkali is indicated by a brown spot.

2. Imperfect saponification or free fatty matter is disclosed by dissolving 20 grains of the soap in 100 grains of water, when spots called "eyes" are formed on the surface, if the saponification is incomplete.

Antiseptic Materials. Many materials possess antiseptic qualities, but chloride of zinc is exclusively used for this purpose. This substance prevents all fermentation and the formation of mildew on the fibers.

Saponifying and Emulsifying Materials. Lime, caustic potash and soda, carbonate of potash and soda, and ammonia.

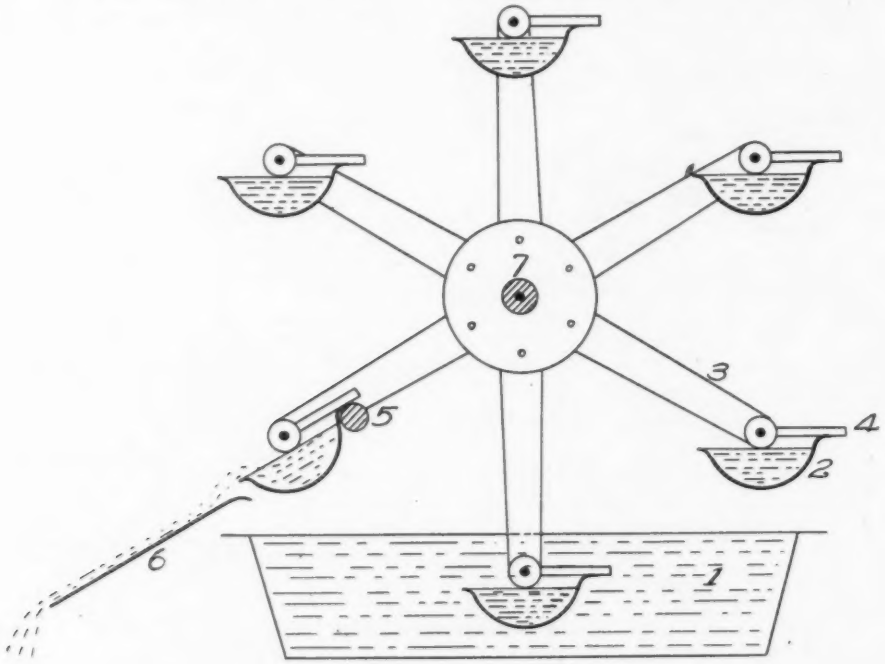


FIG. 3. APPARATUS FOR OILING WOOL.

Deliquescent Materials. Among the substances which cause moisture to be deposited on the fiber are sulphate of soda, chloride of potassium and glycerine.

Gummy Substances. The object in using these is to maintain the mixture, and prevent the fatty materials from separating and forming in layers. The principal products are lichen, linseed oil and seaweed. Among the animal oils may be classed lanoline, which is extracted from wool grease and is well adapted for the oiling of wool. It emulsifies easily by contact with the slightest traces of alkali and soap. This emulsion is stable. It is made free of color and odor. This substance is a yellow, waxy mass with a feeble

odor slightly fusible and insoluble in water. Being extracted from wool grease, it is evident that this material is one of the best for oiling wool.

APPLYING THE OIL.

The operation of applying oil to the wool by hand requires no special attention here. The wool is spread in successive layers on the floor and the oiling solution sprinkled over each layer with a sprinkling can. There are a number of devices for oiling wool by mechanical means. Most of them are attached to the scouring machine and some are used on the first breaker card.

Fig. 1 shows an oiling device to be attached to the wool scouring machine. The wool on coming from the machine is carried by an endless apron under the drum, a, which is provided with wings as shown. The oiling solution is fed from a tank, M, by the pipe, m, to the basin, D, in which the roller, C, revolves. The solution is delivered by the roller to the plate, B, from which it trickles to the drum, A. As this drum revolves the wool is opened up and the solution distributed over the material.

Fig. 2 shows an oiling attachment used in the combing mill of Vinchon, at Roubaix. The wool coming from the rollers, 1, of the scouring machine is delivered to the apron, 2, from which it drops to the drum, 3, which opens it up, it being oiled at the same time. The oiling solution in the basin, 4, is delivered by the roller, 6, to roller, 7. While roller, 6, moves very slowly, roller, 7, is driven rapidly, the oil being stripped from roller, 7, by the brush, 8, which also revolves at a high speed, throwing the oil down on the wool in the form of a spray.

Fig. 3 shows the oiling apparatus used in the combing mill of Amedee Prouvost et Cie, at Roubaix. The solution is kept at a constant level in the basin, 1, and carried by the buckets, 2, which are attached to the arms of the reel, 7. These buckets are slightly longer than the width of the apron carrying the wool and they are arranged to swing on a pivot on the end of the arm, 3. They are tipped by the stem, 4, coming in contact with a pin, 5, causing the solution in the bucket to flow on to the belt, 6, from which it drops on the wool. These illustrations of oiling attachments could be multiplied indefinitely if necessary.

Oiling wool is a very important operation and should be done carefully. If the oiling is irregular the process of carding and spinning will be made more difficult and the product will be defective. If an excessive quantity of the emulsion is used and especially if the emulsions are made with inferior oils, the oil will stick to the card clothing. If, on the other hand, the quantity is deficient the fibers will form in balls and be broken in the various processes.

OILING SOLUTIONS.

1. Heat to 140° F. for one hour

Soluble oil	lbs.	50
Olive oil	lbs.	45
Carbonate of soda	lbs.	5
Water	lbs.	180

Stir well. This solution is very clear and stable.

2. Boil the following:

Cotton oil	lbs.	80
Caustic potash solution	lbs.	3
Water	lbs.	280

After boiling gently let cool and stir mechanically four hours.

3. Heat to 120° F. for 3 to 4 hours.

Peanut oil	lbs.	40
Olein	lbs.	50
Soda solution 36 b	lbs.	10
Water	lbs.	270

Let solution cool and add oil of vaseline 25 lbs. Stir until cool.

4. Water lbs. 210
White soap lbs. 25
White glycerine lbs. 60

5. Raise temperature gently to 194° F. while stirring well.

Water	lbs.	150
White glycerine	lbs.	30
Light brown olein	lbs.	70
Carbonate of potash	lbs.	5½

Let cool to 104° F., keep at this temperature for 2 hours, adding after one hour

Water	lbs.	50
Chloride of potash	lbs.	25

6. Solution for fine wool. Boil together

Water	lbs.	200
Panama bark	lbs.	25

Stir at a temperature of 90° to 105° F., and add

Olive oil	lbs.	45
Ammonia	lbs.	6

If the solution is not white and viscous, add ammonia and heat the mixture while it is being stirred. It is necessary that the mixture should have only a slight odor of ammonia.

7. Heat for 3 hours to 112° F.

Water	lbs.	320
Fulling soap	lbs.	42
Cotton oil	lbs.	90
Olive oil	lbs.	75
Sulphate of ammonia	lbs.	1.2

8. Solution for colored tops. Mix at a lukewarm temperature while stirring

Cotton oil or peanut oil	lbs.	36
Black soap	lbs.	21
Water	lbs.	125

Add at a boil

Irish moss	lbs.	15
Water	lbs.	100

Stir well and let cool slowly to 104° F.

9. Mix for six hours

Peanut oil	lbs.	30 to 40
Clear lime solution	lbs.	60 to 70

These various solutions are in use in France and give good results and can be kept without deteriorating for 3 or 4 months.

10. Kattenbusch Solution.

Potato fecula	lbs.	1½
Olein	lbs.	5

Mix in a paste form and add

Water	lbs.	2

Bring to a boil and add slowly

Water	lbs.	58

Let boil and stir well.

I close this list by calling attention to the Labarthe mixture which has for a base rosin oil mixed with an equal quantity of gelatinious emulsion of lichen or seaweed. Wool oiled with this solution can be scoured clean in water at 104° F., containing 1 per cent. of white soap.

MANUFACTURE OF MITCHELINE OR SATIN QUILTING.

BY GLAMORGAN.

These fabrics, which are manufactured mainly in Bolton, England, are extensively used in all parts of the world for bed coverings. The principle of the structure has also been adopted for other types of fabrics, such as dressing gowns. This fabric, the name of which bears no relation to the weave employed, is of a compound or double cloth structure, made up of two cloths stitched together so as to be inseparable, like some tapestry fabrics. The figure is obtained by transposing the two cloths, which are generally all white, blue and white or pink and white.

FIG. 1. A PORTION OF A SATIN QUILT.

Fig. 1 shows a small portion of a satin quilt. Two sets each of warp and filling are used, one of the latter being coarse and the other fine. The warp is woven from two beams, and arranged in the dents as follows:

1 Back, colored; 1 Face, 1 Back, colored; all in one dent.

The jacquard governs the colored warps,

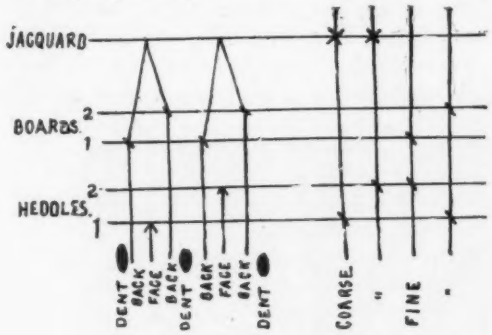


FIG. 2. FIG. 3.

one hook controlling the back ends one on each side of a face end as shown in Fig. 2, which is the draft or tie-up, for this satin. The colored threads are also controlled by two movable comber boards, the harness being knotted above the boards. The face threads are governed by two healds working in front of the harness as indicated.

The filling is inserted in the following order: 2 coarse picks, white, 2 fine picks, colored. When the two coarse picks are inserted, the machine is raised in order to form the pattern, and the two healds are worked over in plain order, thus making a plain white cloth with the coarse weft. In the fine picks the machine is down, and the comber

FIG. 5.

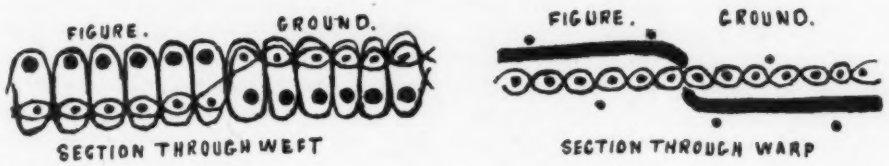


FIG. 4

boards are worked over in plain order, making plain cloth with the back colored warp. At the same time the healds controlling the face warp are worked over as shown in Fig. 3 and thus the two cloths are inseparably stitched together. As a result a very compact and serviceable fabric is formed.

is also provided with a double box at one end, arranged to lift for two and fall for two; inserting the weft as desired. In coarse cloths where very coarse weft is used, it is usual if the curve of the figure demands it, to present a fresh card for every coarse pick. This necessitates a slight alteration in the

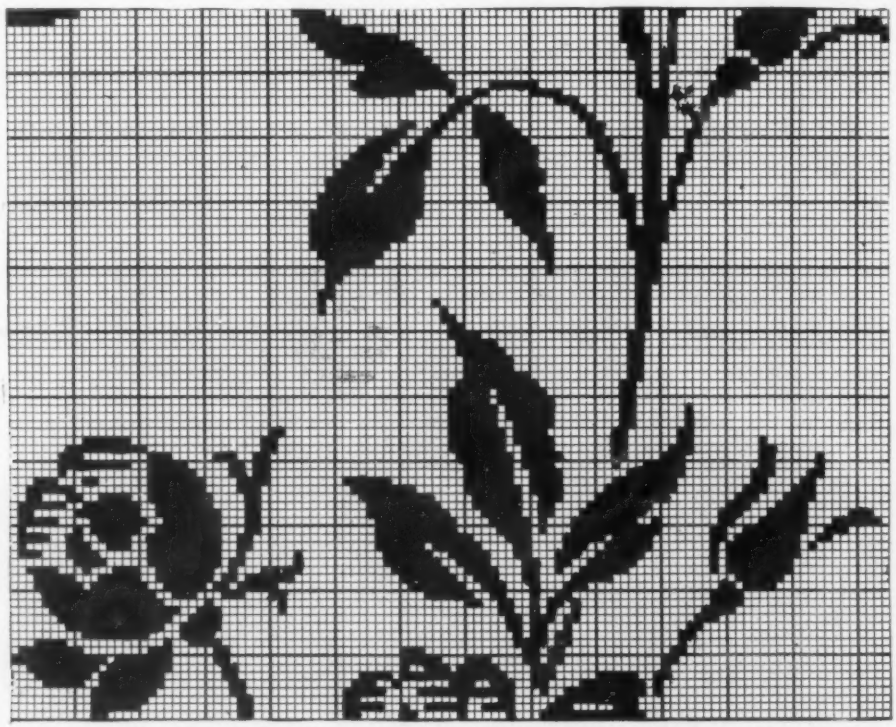


FIG. 6.

The designs for these cloths are painted solid. Figs. 5 and 6 show a portion of Fig. 1 on both plain and point paper, while Fig. 7 shows the working of each end and pick. Every card of the design serves for four picks in the cloth, two coarse and two fine. Arrangements are made so that by the aid of tappets at the side of the loom, the machine is up for two coarse picks and down for the next two fine picks. Two tappets are required for the comber boards and two tappets govern the healds. These tappets are all built four to the round and lift as shown in the lifting plan, Fig. 3. The loom lift for the machine, which strikes a fresh shed for each coarse pick and remains down on both fine picks.

A fair quality of patent satin quilt would contain about 72 buds per inch, 48 back and 24 face; and 108 picks per inch, 54 coarse and 54 fine, or 27 cards, the counts of warp being 2/50s for face, 2/30s for back; and of weft, 6s for coarse, 20s for fine. The width of these fabrics is generally 99 inches and the length corresponds.

A comparison of Figs. 6 and 7 shows the enormous saving in cards and time required for designing, which is effected by this clever

combination of harness, comber boards and healds. In Fig. 7 the black squares show the coarse weft on the face according to pattern; crosses on the coarse picks show face warp lifted where coarse weft is not to

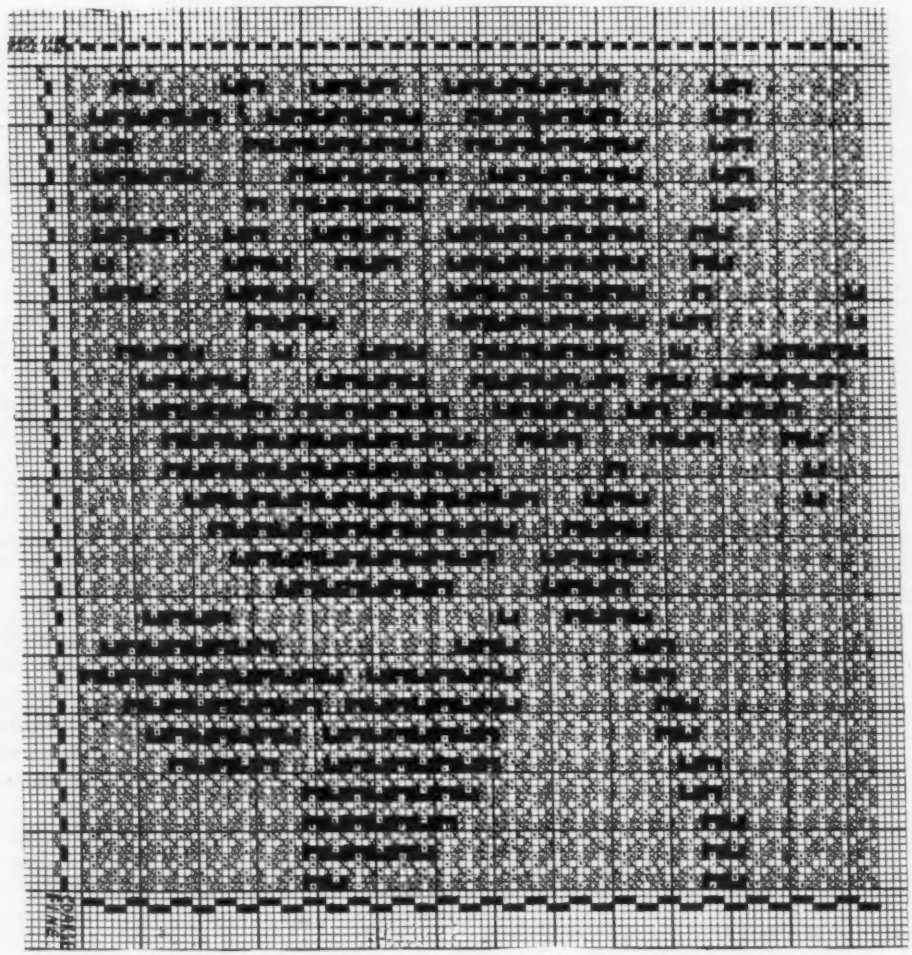


FIG. 7

show on face; crosses on the fine picks show face warp weaving plain with the fine weft; dots show the back warp binding coarse weft on the face and also the back of the fabric.

The cotton crop of Hayti in 1909 amounted to 3,615,972 pounds.

ENGLISH NOTES.

(By Our Special Correspondent.)

American mill men may well have wondered what all the pother has been about that has kept the Lancashire cotton industry on tenterhooks for three weeks and idle for one week. Englishmen have wondered too without being able to see much more than that the Cardroom Workers' Amalgamation in a combative frame of mind found the Employers' Federation as rigid as a statue. The employers have upheld absolutely their

claim to discharge a man who refuses at his union's dictation to obey certain orders. They have consented readily enough to submit to arbitration the question as to which side has misconstrued the Brooklands Agreement which has governed relations between employer and employed for seventeen years. The spindles are at work again, but it is none too sure that the bad blood between the cardroom officials and the powers of the Federation has all been let and that peace is assured for the future.

* * *

Wages in the English cotton industry are based to a greater extent on piece-work payments than in either the woolen or worsted trades. This fact accounts in some degree for the higher wages received by cotton operatives and for disputes like that with the cotton card-room workers. It may account further for some superior keenness in the cotton industry about the efficiency of machines. At all events the merits of the piece-work system have been brought before Huddersfield people by G. H. Wood, secretary to the Huddersfield Woolen Manufacturers and Spinners' Association. Mr. Wood's idea of textile scales is that they are of no use to the world unless they guarantee the status of the operative and penalize the backward manufacturer. He advises an overhauling of nearly all the scales in the woolen trade and a revision of rates putting the whole worsted business on a piece-work footing. This is in line with his general contention that piece payments ought to govern all work of a purely mechanical or routine order, and that time-payments should be made solely when quality rather than quantity is demanded. In the worsted dyeing trade workmen who thought they had an unconquerable aversion to piece-work have found on sufficient trial that they like it and that the system does much better for them.

* * *

After deliberating three years a Government committee have been unable to recommend any exceptional measures to restrain the sale of flannelettes. They feel that there are other inflammable substances in common wear and that the law could not say "Yes" to celluloid and "No" to flannelette. They observe pointedly that no law of Parliament can prevent carelessness in the use of dangerous things. The furthest they will go is to recommend a measure penalizing the use of the term "non-inflammable" upon flannelettes which do not withstand a certain test. Recognizing to the fullest the fatalities occurring from flame and flannelette they point out that matters are in a fair way to right themselves. Great improvements in manufacture have taken place and more are expected. There is the possibility always open that a cheap means of efficient fireproofing will be found. Meantime it is remarked that the use simply of a little alum or borax in washing flannelette goods appreciably reduces the liability to accident. The public, in short, have affairs largely in their own hands and by buying good qualities of flannelette and washing them properly can do something toward their own safety. Their security can be guarded absolutely by keeping out of the way of fire.

* * *

Bradford does a considerable business in South American wools on what is variously known as the clean-scoured or guaranteed-yield basis. The buyer orders clean wool and receives greasy which is invoiced to him at such a price as should bring the net wool in at the bargained limit.. A contract to govern those transactions has been adopted by the British Association of Wool Buyers. The buyer orders upon the basis of the out turn of tops and noils; tops being conditioned at 19 per cent. humidity and noils at 14 per cent. with allowance of 3 1/2 per cent. for oil and fatty matters. He accepts a bill at 90 days on presentation of the bill of lading and the seller effects marine insurance.

On the arrival of the bales into port the buyer determines whether to accept the lot as it stands or to demand a test. If a test is claimed 15 bales, or 10 bales per hundred, are sent to be sorted and combed in a neu-

tral establishment agreed on by both sides. If a guarantee of the yield is claimed the buyer must pay an extra 1 per cent. and under-yield is to be made good by the seller and any over-yield to be given up by the buyer. Actual tares are taken, but 1 per cent. is to be allowed by sellers for draft. Conditioning expenses are to be equally divided and arbitration is to settle all disputes. The aim of the drafters of the new contract is to ensure uniformity and the terms are laid down after consultation with South American houses.

* * *

Worsted designers who have not already heard of the "Chantecler" style of fancies will be hearing of it soon and will doubtless wonder what the name implies in worsteds. It is a style which Huddersfield firms have sold well for spring wear and is a colored variation of the neat little 2-and-2 effects which have been popular in black and white. The designer has helped himself freely to colors which would be gaudy and discordant if the design were on a large scale. As shown by two cuttings sent to the Boston office of this magazine, the effects are neat and bright but not loud. "Chantecler" is probably well worthy of American attention.

Suit stripings, after running through all manner of combinations and varieties, are returning to the beginning again. For the exclusive trade plain line stripes and hair stripes at quarter-inch intervals are a favorite line. The stripe is of similar color to the twill, but is a few tones lighter in shade. I learn that no favor is shown to white stripes at present. The popular colors are brown and navy blue.

The woolen mills continue to do well out of men's tweeds and dress tweeds are selling very much better than plain cloth or worsted dress goods. Knicker effects are in demand for dress goods and silk noil effects in the usual order of fashion ought to follow.

* * *

Yarn diameters are to some extent independent of counts and, according to the head instructor in the Keighley Textile School, involve a question which has received much too little attention. It is perhaps more interesting than practical to learn that the cross sections of two-fold yarns vary from 1.637 to 1.456 times the single diameter. Mr. Fletcher's point is that without consideration of the thickness as well as weight, of a yarn, cloth-construction cannot be truly scientific. Thousands of makes of cloth are said to have been spoiled by neglect of this factor and as safely it can be affirmed that tens of thousands have suffered hurt from neglect of a proper balance in count between warp and filling. With what may be a distressing disregard for pure science buyers and sellers have contended that these defective structures would do and have continued to make them. Tender regard for science is more a mark of the schools than the mills in this country. The practical man's inclination is to do things first and to listen with more or less interest afterwards to a scientific explanation of how he did them.

* * *

A statistical inquiry into cotton mill accidents reveals the not very surprising fact that accidents occur oftenest when trade is briskest. The accident rate is compared with the consumption of raw cotton and it is shown on graphs that the accident curve increases two and a half to three times as fast as the consumption curve. Part of the discrepancy may occur because the consumption is an imperfect test of trade activity. "Accident" within the scope of this inquiry means anything which keeps the operative off work for more than one day and the bulk of these are trifling. Only 83 per cent. of cotton mill accidents involved absence of more than three days from work in the busy year 1907. Only seven operatives out of a thousand were disabled even for a day. In cotton spinning the casualties were 1.26 per cent. and in weaving .29 per cent., making an average .69 per cent. throughout the industry. More than a fourth (26 per cent.) of the accidents were purely unpreventable and more than one-third (37 per cent.) arose from cleaning machinery in motion. Half the cases showed negligence on the part of

the injured person and 6 per cent. showed gross negligence. Accidents such as falls, bruises, scratches, etc., not due to the presence of machinery at all, were just about as numerous as those of a mechanical origin. The fatalities (49 in the year under notice) are certainly few in relation to the number of workers.

* * *

An exporter's loud lament that he still cannot get hold of worsted stuff pieces, ordered eleven months ago for delivery in three or four months, has scarcely aroused the desired sympathetic indignation. People chuckle over the thought that the worsted spinners are now able to do a little as they like, instead of having to suffer the woes of all other parties as well as their own. It is perfectly well understood in the trade that there are persons who do carry out contracts and persons who do not. The people of good faith endeavor as far as is possible to deal with each other and to boycott those who are not to be relied on. And when a merchant complains late in the day that he cannot get his goods he is advised to pay respectable prices and deal with decent people. Spinners are full for six months ahead and are not anxious to spin the fine numbers of their old contracts or to deliver at the lowest prices they have booked, but any customer with a good name who exerts pressure gets what he wants with a not excessive delay. The others have to pay for their own past sins.

A manufacturer at a pinch can usually get slight relief by approaching the agent of some spinner with whom he does not ordinarily deal. If his name is good enough the agent sees that enough yarn is stolen from somebody's contract to give the new customer a good opinion of the firm.

* * *

Not much has been done in this country to make paper and print replace samples of the actual fabric, but the pattern-book of a maker of saddlery webbings shows that this can be done to excellent effect with his goods. The three-color printing process is used to reproduce in their actual colorings photographs of alternative designs. Single samples show the quality and reference to the pictures does the rest. This manufacture of saddler's textiles has been carried on by one West of England firm for well over a hundred years. The goods are non-elastic and mostly 2 1/2 to 6 inches wide. They include white and colored worsted, union, jute and cotton girths, linen and jute straining webs, flat and circular woven halters, reins and bridles. Some of them in bright and tasteful designs. Webs of a kindred sort are used for belts and braces for men, and others are made of macrame cotton twine. The armies are considerable customers of people in this line and worsted shoulder-sashes, cotton haversack straps, tent webs and cotton rifle slings are also made on their machinery. Jute chair-webbing, mat-bindings, cheese-filletings, stuffing-box webs and elevator-beltings are other of the miscellaneous productions of these narrow-goods mills. Samples of these classes of goods could be sent on request.

* * *

The immediate effect of the fire at the Brussels Exhibition has been to stimulate inquiry for fireproof canvas. There is accordingly a good deal of experimenting with stannate of soda, tungstate of soda, zinc chloride, common salt and so on. Some of the best results are obtained by the aid of the first-named agent, which is the salt used in the "Nonflam" process of treating flannelette. A Government order calls for a more difficult requirement, namely a canvas at once waterproof, fireproof and rotproof. The fireproofing chemicals being of a nature which attracts moisture from the air are to that extent favorable to the cultivation of rot or mildew. Something to counteract mildew is sought and the disinfectant known as cyllin is being tried. Thus far experience does not warrant the expression of an opinion upon its merits. Two per cent. of anhydrous zinc chloride is said to be effective against rot.

For rot-proofing in the past corrosive sublimate has been used, but the War Office objects to mercury in canvas which may be

used as an extempore nose-bag or drinking trough. Willesden canvas and other of the greened canvases are proof enough against rot and white ants, but they owe their immunity to copper, which also is considered objectionable in food and drink. Hence the search for a powerful and not too soluble germicide, fatal to bacterial organism, but harmless to animal life.

* * *

The largest firm in the fancy knitting yarn trade (J. & J. Baldwin & Partners) has closed its knitting department and is putting down machines to do more of its own combing. The matter is mentioned as an instance of the tendency to confine functions to one branch. Some of their competitors, like Isaac Briggs, of Wakefield, continue to knit tops for cycling stockings and to turn out some complete hose. Fleming, Reid & Co. not only knit all manner of garments out of their own yarn; they sell the garments and mending and fingering yarns in their own retail shops throughout the country, but their example is unique. Generally speaking, spinners do not knit and knitters do not spin and the great bulk of white worsted yarn for hosiery is made by firms that produce weaving yarns as well and have no thought of doing a knit-goods business.

It is understood that the fancy hosiery spinners are discontented with what the invention of the knitting machine has done for them. One of them says that the machines which ought to have been the making of their industry have been its curse. Doubtless the language is exaggerated. The fancy spinners do passably well, but the cheapness of the machines and the hire-purchase system has tempted into the knit-goods business people who are not always able to pay the spinner in full. Knitting machines have been of less questionable benefit to the producer of plain yarn.

* * *

The advertised invasion of the English clothing market by a New York clothing house continues to cause a little discussion. It is understood that some English wholesalers are entertaining the American offer and one clothier has already set out to make ready-mades in the American style at 30 per cent. less than American prices. Enquiries do not tend to make the difficulties in the path of the Americans look any less. Clothing factors (jobbers) in this country are not in a very large way of business, as a rule. Those with a large trade are themselves makers of clothes and they buy outside only what they cannot profitably make themselves. Various factors and owners of multiple shops have been driven into making-up for themselves by the difficulties of getting delivery from the outside. One firm with a hundred retail shops used to be obliged to place its orders six months and more in advance. Rightly or wrongly it is generally believed in this country that Americans are less to be relied on to deliver at the appointed time than English firms are. The view is shared by persons who feelingly admit that English firms are bad enough. An announcement of an American invasion once created a small revolution in the boot trade and this new one is not unlikely to hurry English clothiers up.

ROLLS OR NEPS IN CARDING.

BY JOHN BROWN.

Some time ago the following query appeared in the Textile World Record:

> I send you samples of twisted rolls or neps which form on our cards, when carding English 46s. These rolls form between fancy and doffer and can be seen dropping on the floor after having been drawn down by doffer. The speed of the tumbler has been changed, but without improvement. The card is 48 by 48 with 34 wire on cylinders. Fancy, 9 inches, 28s wire, open set. Altering position of workers has no effect. This difficulty is encountered with 46s grade only.

The idea that one style of card will do all classes of work has long been exploded; and the best practice is to have special cards for special work, that is, within reasonable limits. Both coarse and fine cards will do a good range of work, but each style has its limit.

On careful examination of the rolls or fribs, sent, it is found that they contain mostly the best and longest fibers, and are

not, as might easily be supposed, composed of short, fribby wool.

Although they show themselves most at the finishing end of the card, that is, after the fancy has lifted the stock in the cylinder ready for the doffer, yet, judging from the size of the fancy, and supposing that other rollers are of sizes in proportion, there is not the least doubt but that the nucleus of roll is formed farther back in the card. Whether this is so or not, could be best judged by either seeing the card, or by knowing the size of roller, speeds, and counts of wire. Judging from the few details given it seems as if the best thing to do is to speed up the fancy, and to let it work lighter on the cylinder.

The sample sent, 46s, is as a rule a free open wool, and under ordinary circumstances, easy to card, giving a good, free and clear sliver. In fact this count is at the boıder line which divides low from fine grades.

Great care is required in scouring. If too lightly scoured there is a tendency to gumminess. If liquor is used too hot or too heavily charged with soap, it has a tendency to come to card lean and stringy.

With this grade of wool it is a good plan to run the doffers on both cards at a rather higher speed than is usual, so as to take all the wool well out of the cylinder. Though this produces a smaller sliver, it makes no difference to the weight turned out, the only difference being that more slivers must be put up at the backwasher to get the backwash sliver the right weight.

The wool itself does not require much carding. The fancy has not much work to do, for as a rule there is not a preponderance of short fibers and the stock is easily raised from the cylinder.

A probable cause is that the fancy and workers are too small in diameter. It is a well known fact that the larger the diameter of the roller in contact with one another both in carding and combing, the better the results. Although there may not seem much difference in contact between a 9-inch and a 12-inch fancy and the swift, yet in practice it is found that there is a great advantage in using the larger size.

The annexed plans showing size of rollers with table of counts of wire and speeds, give what has been proved to be a good machine for dealing with the quality or grade under discussion, besides being efficient in both higher and lower qualities within reasonable limits.

Clothing and speed of rollers for carding 46s to 50s or 52s X bred.

Roller	Wire	Count	Crown	R.P.M
1st Licker	Garnett	..	..	8½
2d Licker	24	60	6	12½
3d Licker	26	80	8	50
4th Licker	30	100	10	100
1st Divider	24	60	6	3½
2d Divider	26	80	8	3½
3d Divider	29	90	9	3½
4th Divider	31	110	10	4¼
1st Cylinder	31	110	10	100
1st Workers	32	115	10	3⅓
1st Strippers	27	80	80	277
1st Fancy	29	60	7	514
1st Doffer	32	115	10	4⅜
Angle Stripper	30	110	10	500
2d Cylinder	33	125	12	100
2d Workers	34	130	12	3⅓
2d Strippers	30	90	9	277
2d Fancy	31	70	7	516
2d Doffer	34	130	12	4⅜

GERMAN METHOD OF EXAMINING YARN.

BY REGENT.

The customs regulations controlling the admission of cop and fly spun crossbred luster yarn into the German Empire are possibly interesting from other than a tariff point of view. These yarns are admitted at a low duty if they are hard and lustrous and made from wool originally 8 inches or more in length. The German authorities have sought in various ways to lay down a hard and fast rule for determining the constitution of these yarns. They have endeavored to find a fixed basis for measuring hardness and another for measuring length, with an allowance for breakage of original length in drawing and spinning. They had one set of rules in use at a time when length rather than luster or hardness was taken as the leading qualification. The thickness of the fiber was taken by use of the micrometer and an assumption was made that all yarn could pass

whose fibers had a mean diameter of 34 micro-millimeters or more. The theory that there is a fixed ratio between length and thickness had to be discarded. They also found that it is by no means an easy thing to measure the diameters of fibers that are not all circular or all of equal size throughout their length.

The regulations were succeeded by new ones under which it was only necessary to prove that in five lengths of 24 inches each there was an average of three fibers per sample longer than the 8 inches of the schedule. The authorities were led to the conclusion that the finest yarns made out of hard crossbred tops contain at least 25 to 30 fibers. Pressure has been used to have consideration paid both to the question of average thickness and average length and to meet that demand one professor, two technical deputations for industry and a Government department have been assiduously making examinations and tabulating results for a long time. According to the newest regulations, crossbred fibers must have a mean length after spinning of 5 1/8 inches or more and have at the same time the outward characteristics of their description in hardness and luster. Failing these pronounced characteristics, they must have a mean length of 4 3/8 inches or more and a mean thickness of less than 900 degrees of fineness. This average of 4 3/8 inches is the minimum requirement necessary to convince the customs that the wool was 8 inches or more in length to begin with.

Precise regulations for ascertaining the length of the fiber under test and its coefficient of hardness are laid down and may be briefly summarized in this manner:

LENGTH.

A thread free from knots or burrs measuring 86 3/4 inches is selected and its ends are tied in a knot. The loop is hung on a nail, knot downwards and a weight is suspended from it corresponding with the count of the yarn in use. For singles of metric count:

Yards per pound.	Grains.
19,840 or more, the weight is..	67
13,888 to 19,840	92
10,912 to 13,888	123
7,936 to 10,912	154
5,952 to 7,936	231
3,968 to 5,952	308

In case of folded yarn the weight is increased proportionately to the folds and from this loop of yarn so weighted a length of 79 inches is cut and divided into five equal parts of 1.6 inches each, which are weighed on a very delicate scale. The counts are calculated to two places of decimals and pieces 5/16 inch in length are cut off each length and reserved for examination for hardness and luster. The five ends are secured between clips and unraveled to their ultimate fibers and each group so obtained is severed with a razor close to the clips holding them and weighed. Then, twice the total weight thus obtained, multiplied by the count and divided by five represents the average length of hair in the cut.

THICKNESS.

The five cuts of 5/16 inch each are carefully extended over a blackboard. The fibers are counted either by picking up with tweezers or with the assistance of glass plates divided into lines. Then, the number of fibers multiplied by the counts of the yarn, divided by five, gives the value of the number which represents the average thickness, thus indicating the hardness and luster of the yarn.

Although professedly scientific the methods are self-evidently empirical, relying not on the measured length and measured thickness, but on formulae that, it is supposed, represent an average from experience. Perhaps it is all for the best that mill calculations have not to be made in the same roundabout and bat-eyed way which commends itself to scientists and quasi-scientists in Germany. Expert arithmeticians are presented with a conundrum: If it takes 8 1/2 hours to ascertain whether a sample of yarn is made of luster crossbred longer than 8-inch staple, what is the length of time required by similarly scientific methods to convert an inch of it into cloth and why should that inch be computed in milligrammes?

Questions and Answers

Under this head we undertake to answer, free of charge, to the best of our ability, questions pertaining to textile matters received from any regular subscriber to the TEXTILE WORLD RECORD. Questions should be stated as briefly and concisely as possible. Inquiries pertaining to textile processes, machinery, improvements, methods of management, the markets, etc., are especially invited, as well as any legitimate discussion on the views expressed. All inquiries must be accompanied by the name of the person inquiring, not for publication, but as an evidence of good faith.

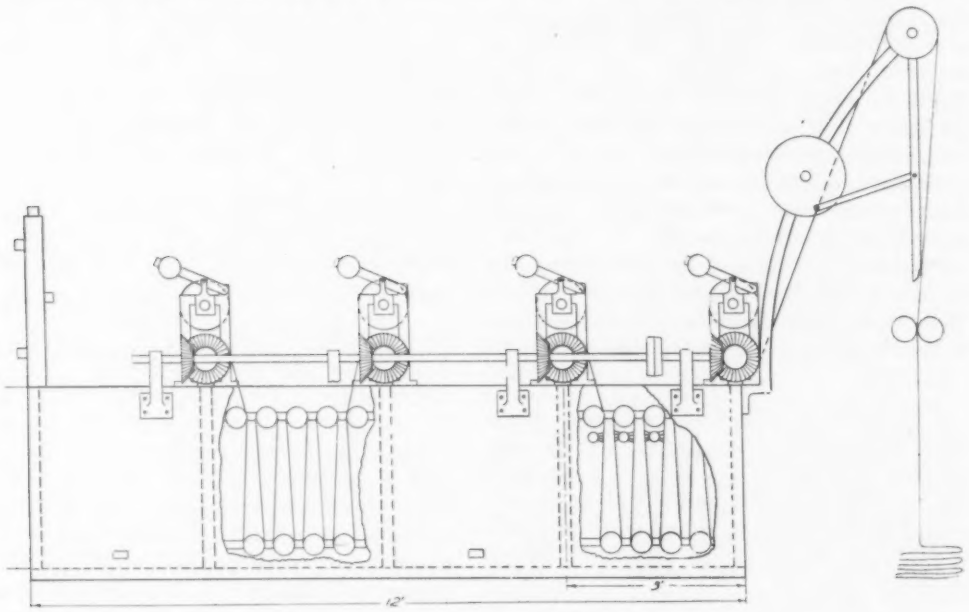
If the question is not of general interest to textile readers and involves expensive investigation, a charge covering the cost may be made, of which the inquirer will be advised before any expense is incurred.

A Four-Compartment Dyeing Machine.

Editor Textile World Record:

Will you give us some information in regard to the so-called four compartment continuous dyeing machine for black cotton goods. We would like to know if we can get a fast black on such a machine, also how many yards could be dyed in a day taking goods weighing not over 5 yards to the pound. This machine we refer to has four compartments with squeeze rollers for each one to press out the surplus liquor, each compartment containing a different liquor according to requirements, the last one the water for rinsing. What we would like to know is about what production one of these machines would give in 10 hours for goods weighing not more than about 5 yards to the pound, or the lowest 4 yards to the pound, also can we get a fairly fast black on such a machine? Dayton (1238).

The four compartment drying box referred to in the above inquiry is rectangular, built of either wood, preferably cypress, or iron, generally 12 feet long and 3 feet deep. For goods 36 inches wide the box should not be less than 46 inches wide inside measurement. It should be fitted with four sets of squeeze rolls. The rolls can be made of wood, iron or rubber covered iron; the two former would have to be lapped with cloth, so while the rubber covered are more expensive as first cost, they are better and cheaper in the long run. The best results have been obtained by having the lower roll a little harder than the top one. The squeeze rolls are set in the usual frame which is fitted up with lever weights. The lower roll is the driver and its shaft carries the gear. The four squeezers are driven by a shaft placed lengthwise of the box. This shaft with tight and loose pullies is belted to the main shaft or better still to a countershaft driven by a variable speed transmission which ensures a faster or slower passage of the cloth through the dyeing machine for the accommodation of different weights and construction.



A FOUR COMPARTMENT DYEING MACHINE.

Each compartment should contain nine

carrier rolls, five on top rail, four on the bottom. The lower ones should be 1 inch in the clear from the bottom of the box. The center of top roll rail should be 28 inches from the bottom. This will permit the cloth and the top rolls to be submerged in the liquor. These rolls can be made of wood, 4 inches in diameter, fitted with iron gudgeons and the usual spurred rings. Here again I recommend the expenditure of a little more money. Use round iron and turn down the ends for the bearing. Gudgeons will work loose, stick and cause no end of trouble. Each compartment should have a valve outlet placed near the bottom for drawing off or cleaning purposes—a scrimp bar should be placed in front of each nip.

On 4-yard plain woven goods the machine should be driven 25 yards a minute, drills not over 20. Lighter weights may be run faster. A good, absolutely fast black can be produced at a minimum of labor cost. The dyer and two boys are sufficient for its operation. The mixings should be made in separate tanks on an elevated platform, and the liquor regulated to flow in fast enough to keep the material covered at all times, except when going through the squeeze rolls. A very important feature is the rinsing, which is done in the last compartment. Squirts (perforated pipes) should be ample to play on face and back; the outlet should be open at all times in order to rid the compartment of the rinsings. If a good bloomy color is required the goods can then be taken to the soaper or taken at once to the drying machine and not allowed to lie too long in the trucks. John D. Street.

Flyers for Spools.

Editor Textile World Record:

In the Question and Answer Department of your October issue, under the heading "Flyers for Spools" (1225), "Flyer" asks about a difficulty that I have had to contend with on the same size spool. When using the flyers the friction has increased, the diameter of the spool was less and finally the yarn would break. It was, therefore, necessary for me to abandon the flyer method. I then tried an original idea of my own with more success. I took a skewer from the spinning frame and turned it down until it went through the spool freely. I then made a frame on which the spool was placed in a vertical position when unwinding, the same as the roving spools on a spinning frame. If "Flyer" will try this method he will find that it will do the work. There is, of course, very little friction, which must be adjusted according to requirements.

Glengariff.

Setting Worsted Yarn.

Editor Textile World Record:

What is the best method of setting worsted yarn on paper tubes so that we may twist same from the end of the tube without kinking and without much tension. Noil (1231).

Our English correspondent replies as follows:

If "Noil" uses the word "setting" in the sense of "conditioning," i. e., of getting water into the yarn to reduce electrification, the best way is one that the questioner may not find practicable. If he has facilities for storing his tube yarn in open skips in some cold cellar for two or three weeks before twisting he will get the best resuits with the least danger of shrinking the thread irregularly and causing cockles in the fabric into which the yarn enters. Otherwise, he may risk putting the yarn into damper atmospheres for a shorter time or may pass it through a conditioning trough or machine.

Small and occasional lots which prove troublesome by kinking in Yorkshire mills are sometimes dealt with by clearing a space on the floor, laying down one or two thicknesses of clean wrapping paper which have been made moist, but not wet, spreading out the tubes in a single layer thereon and laying more sheets of moistened paper above. This is not given as a perfect substitute, for it is obvious that it is a good deal easier to reach the outside than the inside layers of yarn. Something depends on the size, thickness and wrapping of the tubes.

Spreading on the floor is itself a substitute for leaving the tubes between wet canvas and papers. The apparatus commonly used has been described here before. It consists of a box of five yards or more in length, one yard or so in width and two feet or so in depth. Near one end of this is a water tank and beyond that a roll of canvas. The canvas is wet by being drawn through the tank and has the surplus water wrung from it by passage between nip rollers. This canvas is drawn forward and extended along the floor of the box, dry papers are laid over the canvas, the spools are laid evenly on the papers and are then covered by dry papers. Another length of canvas is drawn forward to cover them and so on until the machine is full.

Some are now using a little machine which

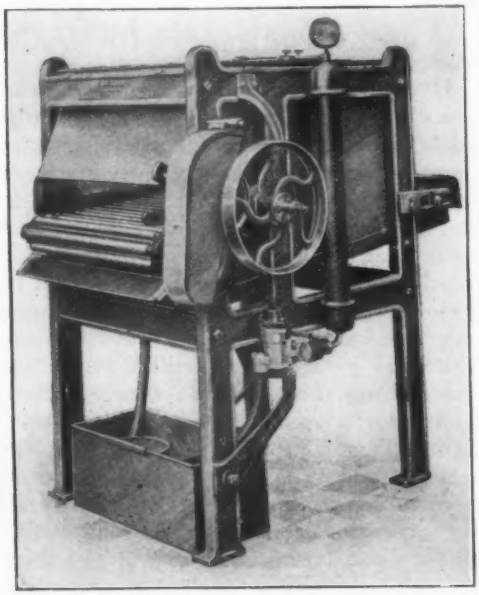


FIG. 1. A MACHINE FOR MOISTENING YARN.

only occupies about 12 square feet for floor-space and whose main features are seen at once in the accompanying illustration, Fig. 1. The yarn is fed to a traveling lattice or apron which turns the tubes over and over in their passage through the humidifying chamber. The water supply for the machine is in the tank at the foot of the machine, from whence it is pumped and thrown in a fine spray through a couple of nozzles. It is said that tubes coming direct from the frame to the machine are equally moistened throughout after about one hour's standing in the skip.

There are means of varying the speed and hence the quantity of water supplied. The fact that the supply is equal and continuous is reckoned important.

In winding the yarn from the tubes, the pegs on which the tubes are placed for winding or twisting are inclined a little above the horizontal. The yarn is passed forward over a bar before passing down to the rollers or bobbin. An iron bar parallel to the board carrying the tubes is used for singles. Two-fold yarn is passed once round a glass rod and then downwards.

[C. G. Sargents Sons Co., Graniteville, Mass., build a yarn conditioning apparatus in this country on somewhat similar lines which accomplishes same results.—Ed.]

Stains on Sweater Fabrics.

Editor Textile World Record:

We enclose two pieces of sweater fabrics, which you will note are composed of cotton and worsted. The cotton, for some reason or other, seems to be stained through the fabric. We cannot understand this as it seems to be in the sleeves of the fabric only, the body part being entirely clear. Can you state the cause and remedy?

Galox (1219).

The dark spots or discoloration are due to the presence of some acid, possibly sulphuric acid or acetic acid, which has accidentally wet the portions of the fabric indicated, and which changes the bright color of the red to a dirty brown or black. The cause of this defect must be looked for in the dyehouse. The remedy for the damaged garments is to rinse them off in a bath containing a small quantity of ordinary ammonia—say 1 quart to 250 gallons of water. The dyestuff used in dyeing these goods is the well known benzopurpurine, possibly shaded with congo red, both colors being extremely sensitive to dilute acids.

Berwick.

Preparing Rags for Shoddy.

Editor Textile World Record:

Kindly give a little information on the process of preparing old woolen rags, principally old stockings and flannels, for manufacture into shoddy.

1. What are the means employed and way of cleaning them?

2. What machinery would be required for working them up on a small scale for our own use, ready for recarding? Glendale (1103).

In England the means employed to clean woolen rags are strictly governed by the condition of the material and the end in view. Most of them can be cleaned in a preliminary way without using water, but if the stockings are caked in dirt like some from the farms of Canada and Siberia a washing is requisite. Soap may or may not be required. Farm dirt yields to plenty of water and assuming that it is not worth while to put in tanks and a revolving fork or paddle-wheel, "Glendale" may find it advisable to use tubs or dyeing vessels and to agitate the material with a pole. For special purposes rags are sometimes washed in a wool-washing machine of the fork or swing-harrow type, when a much less soapy liquor is used than for scouring greasy wool. Throughout English practice the accepted maxim is that the simplest means are best and very few have elaborate outfits of machinery.

The answer to the second question must be also conditional. A drying-chamber is needed where the rags can be spread thinly on a surface that is heated preferably by steam. An atmosphere like the hot-room of a Turkish bath is usual. When the moisture is expelled the dry dirt comes away easily in the dusting machine. This is an enclosed willow or heater having a 36 inch swift with six rows of pegs, a cage or gratings against which the rags are hammered and a fan to exhaust the dust. Machines are made by several builders and are bought for the purpose. But if "Glendale" has a small heater to spare he can use that for dusting rags taking care, of course, to run it at a much lower speed than when opening wool. Manufacturers who only treat rags occasionally or on a small scale use old willows in Yorkshire.

The regular thing in this country (England) is to use a rag-pulling machine for all kinds of woven and knitted fabrics. This has a feed apron and roller traveling about 30 inches a minute when working on softs and a 36 by 18 inch swift making 700 revolutions a minute and armed with hardened steel teeth. Of the materials named it should turn off about three tons weekly. One duster will feed a large number of "devils." The machine is not set to work softs until its teeth have been sharpened and worn down by pulling hard stock. The Colne Valley manufacturers (i. e., those inhabiting Milnsbridge, Golcar, Longwood, Slaithwaite, Marsden and other suburbs of Huddersfield) buy stockings pulled in most cases. They do not require the pulled stock to be free from twist and would not buy it if it were. The ends of yarn only half untwisted are the guarantee that the stuff is stocking waste. The partial pulling gives security that no short stuff which will drop out of the cards has been added. These consumers use 5-cylinder cards which are quite competent to tease out the twist and carry along the short fiber into the cloth which is improved by this addition. In Colne Valley practice there is no recarding; stockings are pulled once and carded once and are then spun and woven.

I have put the question of what machine for "Glendale" to use to an English carder of American and Canadian experience. He is quite positive. "For English cards," he says, "follow the Colne Valley and pull the stockings on a devil. For small American cards, by all means get a garnett. Get it properly set and have it deliver the stuff in condition for the fine cards. You save a process and a lot of material." At all events the authority is a capable and an experienced man versed in every department of woolen manufacture here and in America.

It is not clear that "Glendale" would have any use for carbonizing if all-wool flannels are "seamed" to get rid of the sewing cotton, for loose cotton fiber can be ignored. Cotton warp goods must be carbonized and so far as rags are concerned it can almost be

said that there is only one process in use. The stock is steeped in dilute common sulphuric acid, is relieved of its surplus moisture in the hydro-extractor and then baked for three or four hours at 180° F. or below. Fixed rules for the strength of acid and time of drying cannot well be laid down. Strong acid and high heat dislocate the cells of the cotton quickly, but they tend to injure the

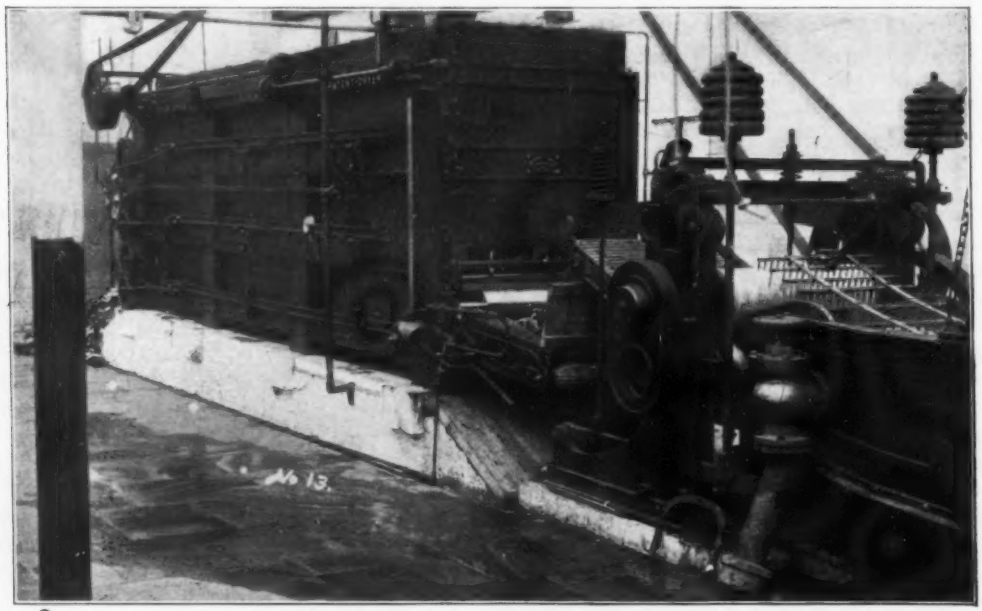


FIG. 1. RINSING AND DRYING MACHINES FOR RAG SHODDY.

woolen material. As the object is to save this from hurt the acid should be as weak as will effect the purpose in the limit of term mentioned and the strength of acid is varied to suit the case. Cotton is more easily carbonized than burrs are and the temperature as well as the acid has its influence. Bowman found that even a 2 1/2 per cent. solution of acid impaired the strength of wool on long heating.

The plant for carbonizing may be simple. Undoubtedly the best arrangement is to have the acid in a pit at floor level and to lower the rags into it in a cage. The best-equipped extracting firms dye their rags in sunk-pits by machines which force liquor through the core of the cage, through the rags and out at the sides. For carbonizing, no pumps are necessary, the material stays under water until properly soaked, is then left to drip and transferred to the hydro-extractor. From thence it goes to the oven, which should be of iron, well lined with paint, having racks or shelves for the material and a flue to conduct away moist air. Except that a tub or tank usually replaces the pit this is the system in almost universal use. The yellowing of whites and the occasional staining caused by condensation of moisture from the roof of the oven is not a serious consideration and the trouble is minimized by care. The rags must not be too wet on entering or the condensation will be excessive. There is the alternative "dry" process in course of which rags are subjected for a similar time to hydrochloric acid fumes. I gather that the process is used more in America than in England and that complete outfits are sold by an American firm.

Carbonized material is better for dyeing

and the acid present is of assistance to the acid and alizarine colors. When the material is not to be dyed the acid must be neutralized with a cheap alkali like ammonia, in order to spare the card clothing. Dawson, Rochdale (Eng.), makes a drying machine to replace the carbonizing oven. The wet material traverses five or seven tiers of conveyors and is blown with a hot blast. Petrie, of the same town, makes machinery for washing pulled rag wool and subsequently drying it. Fig. 1 shows the dryer feeding from the washer. The stock is conveyed internally by parallel advancing bars, and is subjected to a hot drying blast. From the large sized machine there is an output of about 1,000 lbs. an hour of short material.

For working in a small way the lay-out of the plant will be governed by the position of existing machines that may be only temporarily used for rags. The plan, Fig. 2, shows a scheme in which A is the rag-drying chamber, B the duster, C the pulling machine, D the carbonizing oven (wet process), E the hydro-extractor, F the acid pit, G the wool-washing machine and H the dyehouse. By using a certain selection of rags the apparatus D to G can be dispensed with.

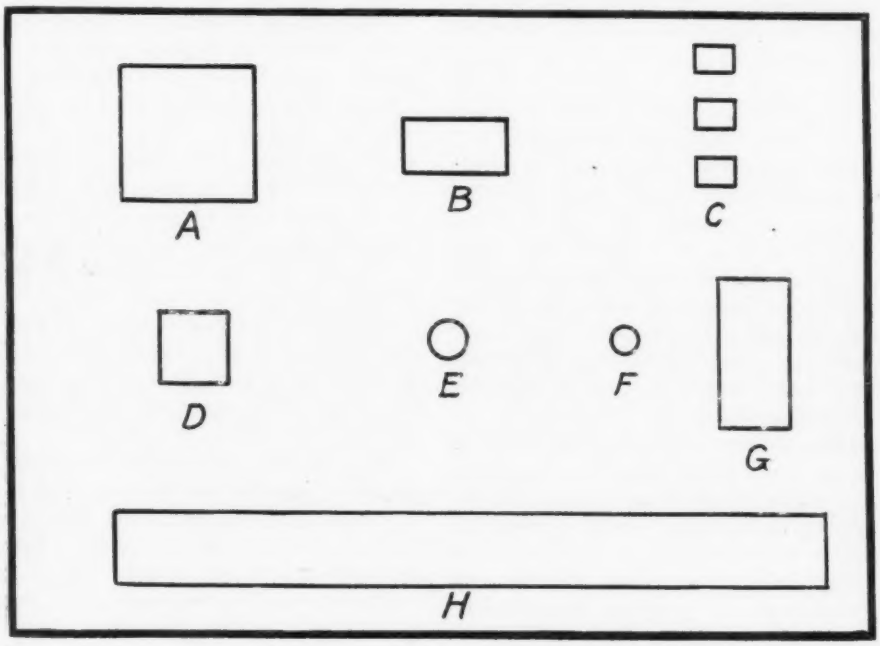


FIG. 2. PLAN FOR A RAG CARBONIZING PLANT.

Ladies' 240 Needle Hosiery.

Editor Textile World Record:

What kind of a ladies' stocking should be made on a 240-needle machine, what should they weigh, and what kind of yarn should be used? Also what price do the retailers pay for them?

Fulton (1234).

Very few manufacturers are now making 240-needle goods. "Fulton" could make a 240-needle mercerized lisle to weigh 14 to 16 ounces at $1.75 to $1.85 and do business with the jobbing trade, to get to the retailer for 25 cents a pair. Fillmore.

The importation of handkerchiefs into Argentina averages about $750,000 annually, of which about a tenth are cotton and silk. Three-fourths of the handkerchiefs are supplied by the United Kingdom, and the remainder by Italy, France, Germany and Spain.

Knitting Department

THE KNIT GOODS SITUATION.

There is little to be said in regard to the knit underwear end of the business for the past month. The situation has been one of extreme dullness so far as it concerned the New York end. There have been no buyers in the market and there has been little for the manufacturer's agents to do but to answer communications from jobbers in which they have asked for the agent's help in getting goods from the manufacturer's hands. We have visited several jobbing houses during the past week and they report fairly good deliveries as a rule, but on some particular lines there is considerable difficulty in getting early orders filled. This refers more especially to women's 25 cent ribbed vests and pants, women's 50 cent combination suits and men's heavy weight combination suits to retail at $1.00.

While the delivery of early purchases has been fairly prompt on most lines, there has been very little duplicate business thus far and it seems to be the general opinion that the jobbers have delayed a little too long the placing of duplicate orders, and that with the beginning of cold weather, there will be a heavy demand and manufacturers will be unable to take care of the orders that come forward. In fact, the better known makers now have enough early orders left, originally placed for late delivery, to run them well to the month of November.

Prices on all cotton lines continue firm. Men's 12 pound fleeced shirts and drawers re held at $3.37 1/2 for Southern made and $3.50 for Northern made goods. From $3.75 to $3.90 is still the price for full weight standard goods made with high grade trimmings.

Men's 11 pound ribbed goods are offered for delivery in two weeks at $3.62 1/2 and those weighing 12 pounds are held at $3.75.

The few manufacturers who are in a position to make women's 25 cent ribbed goods have all that they can attend to for several weeks. The situation in this line of goods has, of course, been made the more acute by the filing of papers in bankruptcy of one of the large manufacturers of low priced merchandise.

During the past month we learn of some orders having been placed on 6 pound ribbed goods at as high as $2.10, and for 7 pounds at $2.30, with the understanding that the goods were to be delivered before November 1. We have been quoted 6 pound goods at $2.00 and 7 pound at $2.20, but for delivery from November 15 to December 1.

Women's combed yarn goods to retail at 50 cents have been delivered promptly, with the exception of some of the patent heavy fleeced ribbed goods that are being made this season for the first time. The deliveries of some of these have been very late on account of the manufacturer's inability to get the machinery installed to make them as early in the year as was expected.

The demand for women's medium weight goods continues to increase and even the trade in the smaller towns have begun to take women's vests and pants running about five pounds to the dozen. Some excellent values in this weight goods are being shown by the Elliott Mfg. Co., Wm. Iselin & Co. and the Roulette Knitting Mills. They are made of combed yarns in both plain and tuck stitches and are being bought at from $3.50 to $3.75, with suits of the same fabric at $6.75 to $7.00. This increased demand for medium weight goods has also extended to the men's department and we understand that several manufacturers are now running some of their machinery the year round on men's ribbed shirts and drawers, weighing about 7 1/2 to 8 pounds to the dozen. These are sold to jobbers at $3.45 to $3.62 1/2, the higher priced goods being made of combed yarn.

SWEATERS.

The demand for sweater coats of all kinds continues unabated and most manufacturers are working their forces full time to keep up with the demand. The business on sweater

coats is done somewhat differently by the retailers than on other lines of knit goods. On account of the great variety of coats being made, retailers buy an assortment of colors and sizes to start the season and do not place orders for any quantities to compare with their season's requirements, so that as soon as the trade begins in the fall of the year, the lines are quickly broken and this necessitates sending in duplicate orders. This makes the sweater business very active during the fall months and we learn of some big shipments being made every day of case lots by express to take care of the demand.

There is already a great scarcity of misses' and juvenile coats at $9.00 to $15.00 per dozen, more especially in red, as this seems to be the color on which there is a large call this season. These are being taken largely with military and high turnover collars.

There is also a heavy demand noticed this season for Shaker knit coats, as the young ladies in schools and colleges seem to prefer this style of garment, and many of them are being sold with high storm collars which are adjusted so that they may be rolled down when desired.

Sweaters of fancy stripe designs that button high at the neck and down the side are selling well, and hoods of the same material to match the coat are being sold to autoists.

HOSIERY.

The chief interest in the hosiery industry is now centered in low priced silk hose and half hose. There is now on the market a women's full fashioned thread silk boot hose with lisle top and two-inch welt, and with plaited silk sole, heel and toe at $3.75, and a men's spun silk half hose at $2.25, and a pure thread silk with a lisle cuff at $3.35.

Despite the fact that some of these cheap silks will not give much service to the wearer, and that many jobbers do not hesitate to tell their trade as much, there is, nevertheless, a big volume of business being done on them, with every appearance of their continued popularity for some time to come.

A very desirable misses' stocking has recently been brought out. Is a plaited silk plain stocking to sell at 50 cents a pair for all the sizes up to 9 1/2.

Jobbers report booking a very good business for spring delivery, especially on light weight mercerized goods. Colors are being taken up very gingerly. In men's half hose, colors are selling readily and fancies have not yet come back to their own, though some business is being done on them. The best selling colors are gray, navy, helio, wine, taupe, green, purple and tan.

Some very good values have recently been brought out in men's feather weight half hose at 80 cents and $1.00 and quite a business has been done on them. Laces in women's goods, as before predicted, are selling freely in all grades.

Some jobbers brought out from German for the fall trade extensive lines of embroidered lisles and report doing a splendid business on them.

One or two German manufacturers have patented a device which they variously term, "The Ravel Stop" and "The Safety Welt" which is designed to prevent any drop stitches caused by the garter fastener to run down the leg. It is on the order of a very narrow welt situated at the lower end of the regular four-inch welt and has the appearance of being practical. One criticism that we would make against its popularity is that the quality of the stocking bearing this device is not as good as can be had without it at the same price.

One German manufacturer has patented a toe cap for women's stockings and this constitutes a piece of cloth fastened on the upper part of the toe and on the outside. Some of them have been brought to this country by importers, but they are anything but neat looking and would, we think, be objectionable to the wearer.

The hopes that were entertained by German manufacturers that a large demand for their products from this country would develop, has not materialized and outside of lace boot lisles, only a very small business has been done. The business that was anticipated on light weight lisles did not materialize. All this means that sooner or later, stock lots will be offered and sold at low prices and that their effect will be felt in this market.

It becomes imperative at times for the German manufacturer to raise additional funds and an always possible way is to dispose of stock lots at prices often below manufacturing cost to American importers.

FULL FASHIONED KNITTING.

BY PAVONIA.

(Continued from September.)

The fashioning requirements on a French narrowing device are in some measure different from that on the legger. Instead of two fingers for each section, there are four, shown in their relative positions at Fig. 54. The footer fingers contain more narrowing points than the legger fingers, the small ones of the footer having about the same amount as the legger fingers. The larger fingers have from 40 to 50 in each. Each section on a French footer carries about 150 narrowing points, a machine of 18 sections with 72 fingers having in the neighborhood of 2,700 points.

Fig. 54 shows a portion of a footer. The proportionate sizes of the narrowing points and their relative positions to the knitting machines are clearly shown. The needle bars are shown, also the fulcrum shafts, levers and cams for the needle motions. The fashioning apparatus stands higher than the needles, being so designed that the narrowing points may stand almost directly above the knitting needles. There are three standards taken in the photograph, embracing four knitting sections. The height of the machine from the floor to the top of the narrowing apparatus is approximately four feet. By referring to Figs. 12 and 15 that part of Fig. 54 relating to the knitting may be better understood.

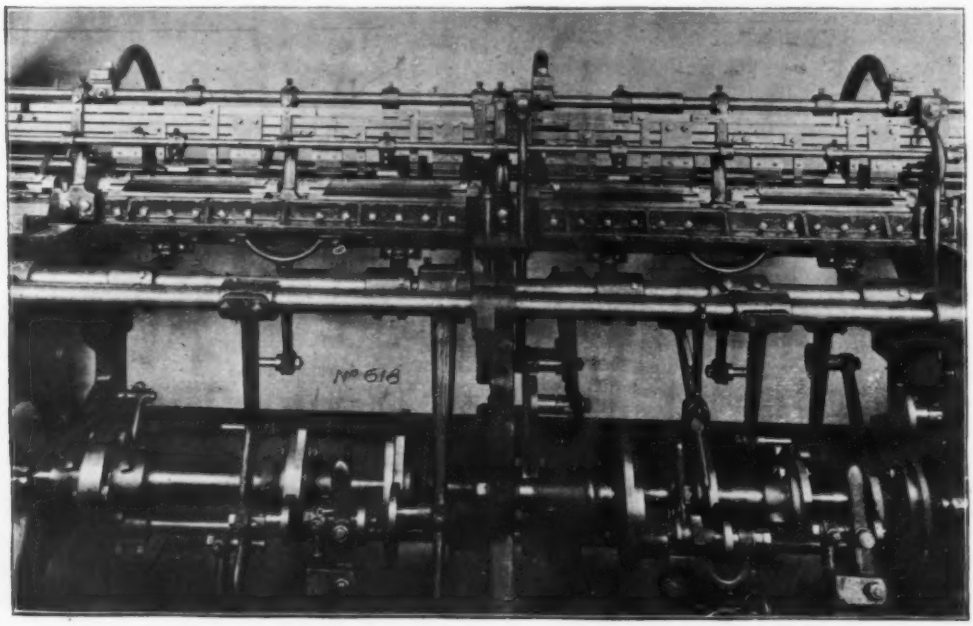


FIG. 54. FULL FASHIONED MACHINE SHOWING FRENCH NARROWING DEVICE.

That part of the Cotton machine which carries the points and other accessories to the fashioning is always called "the narrowing machine." Apparently the idea which suggested this principle is not unlike that by which most of the others were conceived. This fashioning process seems to be the culmination of a series of inventions pointing in this direction, having started with the slow and tedious hand operations, the automatic principle being extended on

each subsequent machine until now the Cotton narrowing method is the full automatic process of fashioning, for in the knitting of stockings the hand manipulations are almost entirely eliminated.

In the early days of full fashioned knitting, the widenings and narrowings were made with four or six points set in a piece

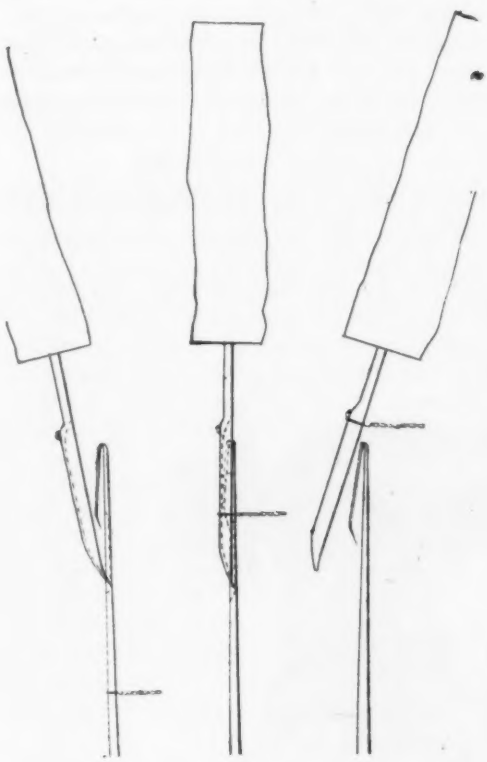


FIG. 56. FIG. 57. FIG. 58.

VIEWS OF NEEDLES IN A FULL FASHIONED MACHINE.

of wood, as far apart from each other as to mesh properly when applied to the needles. This operation was worked by hand. These points were generally stuck into a piece of wood, which was used as a handle. better idea of the structure of the cloth is obtained from Fig. 4, while Fig. 3 shows the lifting plan for the draft, Fig. 2.

William Cotton spent many years of his life as a hand knitter previous to his attempt to produce an automatic rotary knitting machine. His first patent was an upright machine, operated at right angles to the position in which the now recognized Cotton Patent works. It will probably aid in subsequent explanations to show the methods by which he originally did the shaping of the work on the hand machine.

A description of the spring beard needle is necessary to explain how the stitches are transferred. As is well known, the regular spring beard needle has a depression into which the beard of the needle is pressed. The fashioning needles are in no way different from the ordinary spring beard needles, except that this depression or eye, as it is sometimes called, is made longer, extending downward from the point of the beard. Fig. 51 shows this needle and its depression for the beard. Fig. 55 shows it as it looks when the beard is pressed down, and when casting off the stitch.

In transferring by the old hand method the points in the wooden handle are inserted in the grooves of the needles. Fig. 56 shows the relative position of the points and needles at this stage. The next movement is to draw the grooves of points down over the needle beards. This position is shown in Fig. 57, where it can be seen that both the needle beard and narrowing point are buried in the groove of the needle, and that the needle beards are entirely covered by the grooves in the points. If the fabric were on the needles it could be slipped over the covered points of needle beards and on to the narrowing points, leaving the needles absolutely free as shown in the drawing, Fig. 58.

The fabric was slipped on the points by one hand while the other hand held the points to receive the stitches. Only those needles which were covered by the points would lose their stitches, because all the beards not covered would still be open and the drawing of the fabric forward would result only in the slipping of their stitches to the end of the needles under the beards. After the stitches were clear of the needles and were on to the points, they were moved

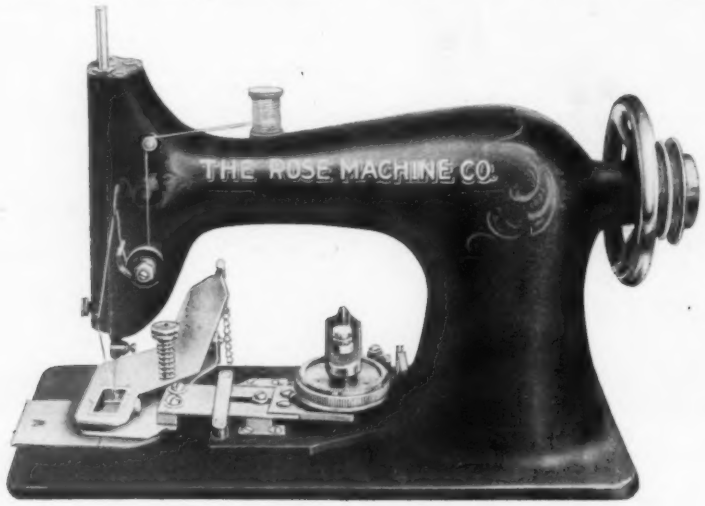
over in line with the next needles. In some cases they were deposited on the second needles from which they were taken.

Transferring the stitches back to the needles was simply a reversal of the taking-off process. Instead of covering the points of the needle-beards, the object was to cover the head of the needles by the hollow in the narrowing-points so that the stitches could be easily slipped from the points to the needles. In fashioning by this hand process, the sinkers in the hand machines were not brought ito service, being utilized only for the purpose of drawing the stitches. Although this method of hand narrowing seems antiquated, the writer has seen in quite recent years the same processes used in England, when large orders for military underwear were distributed among these old hand frame knitters. The facility with which the shaping is accomplished on the Cotton machine is quite as radical an improvement over the hand-machine methods as was the hand machine over the still older knitting pins on which our grandmothers used to knit woolen socks.

A man capable of operating a hand machine has received an education in the art of knitting which few power machine workers possess, although but few of the old school ever reached a point of great efficiency on the Cotton machine. Being accustomed to work slowly and methodically, attending to every detail and rectifying each slight imperfection as it occurred, it would have been advantageous on high grade work such as fine silks if they could have applied themselves to the new conditions required on the advanced type of machine. Instead of this, however, when their work was superseded by the large power knitting machine, those who did not ultimately seek other employment were left as relics of a once prosperous industry.

THE ROSE LABEL STITCHING MACHINE.

The machine for stitching labels to garments, shown in the illustration, is manufactured by the Rose Machine Co., Grand Rapids, Mich. It embodies a number of valuable features which make it especially suitable for this class of work. When labels are stitched to a garment by the ordinary sewing machine it is necessary to cut the labels apart from the roll, to turn the two raw edges under by hand and then revolve the goods so as to stitch all four sides. It is also necessary to stop at each corner in order to make the turn.



THE ROSE LABEL STITCHING MACHINE.

With the Rose method the labels are cut apart and the ends folded in at one operation by the Rose cutting and folding machine. The operator places a row of labels in a reel and feeds one label at a time under the foot which cuts the label from the roll and then turns both edges under. A skilled operator can cut and fold from forty to sixty labels per minute. After being folded the labels are placed in the Rose stitching machine in the same way that a button is placed in a button sewer. The garment is placed over the label and the presser is then released so as to hold both the garment and the label in position. The machine then sews all four sides at full speed without slowing up at the corners and without turning the garment. It will sew the four sides of the label at the same speed a plain sewer can stitch a straight seam of the same length.

Besides being used for stitching labels the Rose machine is also used for stitching on union suits the small reinforcements on the back lapel and on which the button is sewed or the buttonhole worked. This machine is adapted for square or oblong stitching such as finishing the buttons of shirt fronts after the facing and stays are sewed by two line machines. It is also used on custom-made clothing, overalls and for sewing on the paper size tags. The label feed mechanism is sold separately if desired and can be easily attached to all standard makes of plain sewing machines. The machines are covered by patent and other patents are pending.

The imports of raw cotton into Japan in 1909 were valued at $53,937,278, an increase of $9,757,965, as compared with 1908. The total imports for the first two months of 1910 exceeded those of 1909 by $8,231,580.

The imports into the United States of wool for clothing greatly increased last year, reaching 143,801,339 pounds, valued at $31,168,481, or more than double the imports in 1908, and even 50 per cent. higher than in 1907. The direct imports of this wool from Australia last year were 35,177,946 pounds, worth $8,697,451.

IMPROVED NEEDLE AND JACK STRUCTURE.

The object of this invention, recently patented, is to provide for the use of needles of fine gauge in needle beds in which the grooves radiate outwardly, and is described as follows:

Needles of fine gauge, sometimes as fine as sixteen to the inch, cannot be made sufficiently strong to permit of their projection and retraction by the cams. To meet this condition the practice has been to connect them to a stem or plate, known as a needle "jack" on which the cams are adapted to act to cause the proper movements of the needles. In order that these jacks may themselves be of sufficient strength and size to admit of their operation by the cams, it has been proposed to connect a number of needles with each jack, the outer ends of the jacks being formed with an enlargement or head to enable this to be done.

In needle beds in which the grooves are parallel, the proportion of jack grooves to needle grooves will be the same as the proportion of jacks to needles, and by arranging the jack grooves opposite the spaces between the needle grooves, the enlargements or heads on the jacks may be disposed side by side in the needle bed, and the needles may be all of the same length. When, however, the needles and connected jacks are operated in a needle bed in which the grooves radiate from a common center, such for instance as in a dial-plate or conical needle bed, it is found that the heads on the jacks have not sufficient room to operate side by side, because of the closer relation to each other which the grooves occupy as the center of the bed is approached, the exigencies of manufacture and use of the needles and jacks prohibiting the employment of a jack head of such fineness as would admit of the heads, under such conditions, operating side by side.

It is the aim of this invention to overcome this difficulty. It consists primarily in providing a plurality of groups of needles and connected jacks, distinguished from each other in that the needles of one group are

shorter than the needles of the other group, and are so related to the jacks that when the outer ends of the needles are in line and occupy operative relations to each other, the heads of the jacks carrying the respective groups of needles will be out of line and the kind of work required, without sacrificing the strength or size of the operating jacks.

Fig. 1 is a plan view of a dial needle bed equipped with needles and jacks arranged in groups in accordance with the invention, the

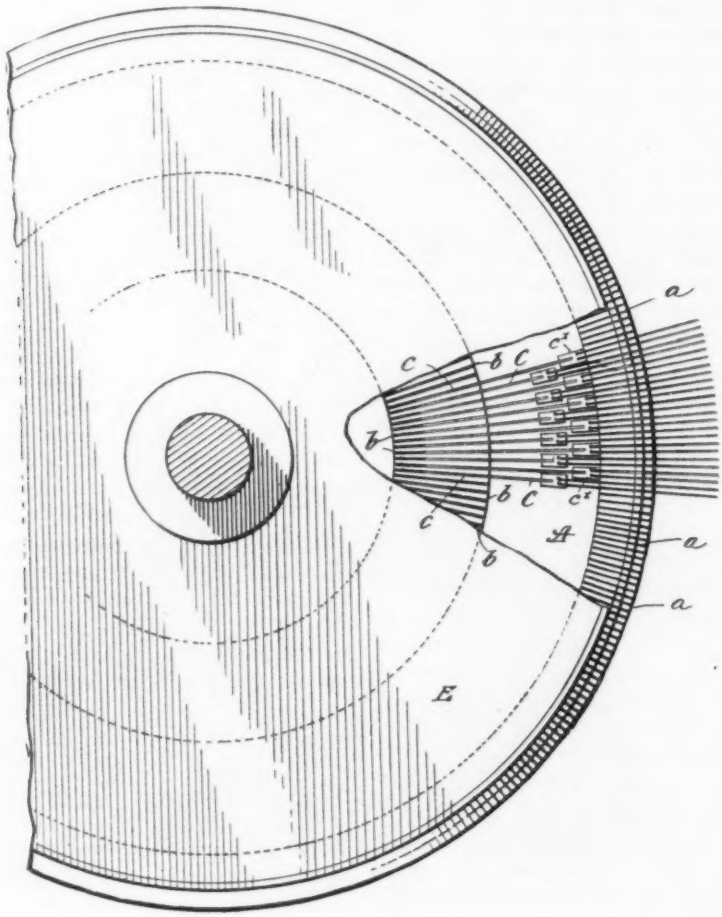


FIG. 1.

not disposed side by side, the heads of the jacks carrying the longer needles being nearer the center than the heads of the other jacks and the two series overlapping.

By this means needles of sufficient fineness can be operated in a dial or conical needle bed, or other form of bed where the grooves radiate from a common center, to produce cam plate being removed to expose other parts to view. Fig. 2 is a vertical longitudinal section through the dial plate and cam plate. Fig. 3 is a perspective view showing a needle and its connected jack of each group.

A represents a needle-dial provided with a series of needle-grooves, a, near its periph-

ery, and with a series of jack-grooves, b, arranged farther inward toward the center of the plate. In these needle grooves are mounted needles connected at their inner ends with needle jacks, C, mounted in the jack grooves and formed with shanks, c, adapted to be acted on by cams, D, on the under face of an overlying cam-dial or plate, E. The rotation of one of these parts relative to the other causes the needles to be reciprocated in the bed as usual to form the stitches.

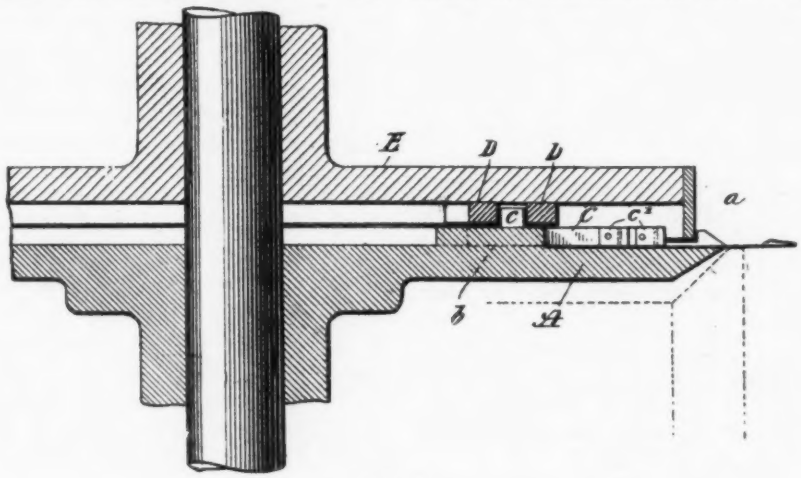


FIG. 2

Each jack, as shown in Fig. 3, carries several needles, in the present instance two, the ends of the jacks being formed with an enlargement or head, c′, in order to adapt the two needles to be attached thereto. This attachment may be effected by any appropriate means. In the present case it is made by forming two holes in the head, to receive the laterally bent ends of the needles. This mode of connection not only admits of the renewal of the needles individually in case of breakage, but also permits of a relative or pivotal motion of the needles with reference to the head in a lateral direction, which takes place as the needles are reciprocated in the bed.

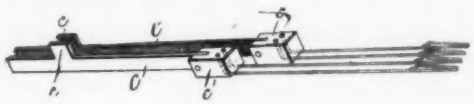


FIG. 3.

As shown in Fig. 1, the needles and jacks are arranged in two groups, the needles of one group being shorter than the needles of the other group. In their disposition in the needle bed, the individual needles of the two groups alternate with each other, their outer active ends terminating in a circumferential line, and the heads on the jacks, by reason of this arrangement being thrown out of line so that they are not disposed side by side. Those to which the needles of the longer series are attached are beyond or closer to the center of the plate than the heads of the jacks to which the needles of the other series are attached, so that the jack heads occupy much less space circumferentially than they would if they were arranged side by side.

This reduction in space is essential to the operation of fine-gauge needles and jacks of the construction described, in needle beds containing grooves radiating from a common center, by reason of the fact that the convergence of the grooves toward the center of the bed restricts the space available for the jack heads to such extent that if the heads operated side by side they would be too small and frail to carry each a plurality of needles.

By reason of the fact that the jack heads

are arranged alternately at different distances from the center of the plate, the operating shanks, c, of the two series will of course occupy different positions in the length of the body of the jacks, the shanks of the jacks carrying the shorter needles being a greater distance inward from the heads of their jacks than the distance between the shanks of the jacks carrying the long needles and the heads of these jacks, these relations of the parts being necessary, by reason of the fact that all the shanks are acted on by the same cams.

It will be seen that these several conditions are met by arranging the enlargements on the jacks, which are necessary for the attachment of the needles, alternately one in front of the other or overlapping, so that notwithstanding the restricted space in dial needle beds or other needle beds where the grooves radiate, such as conical beds, the actuation of fine needles as before is provided for without lessening the strength or size of the jacks or their heads.

Knitting Bicycle Stockings.

Editor Textile World Record:

What are the sizes of ribbers and footers required for making a boys' bicycle stocking, to be used for boys from six to twelve years of age, and to weigh not more than 2 1/2 pounds to the dozen, using a 2/12s or 1/6s cotton yarn.

Knitter (1236).

The machines used for the manufacture of bicycle stockings will depend largely upon the style of the stocking desired. There are several patterns which may be used in this class of work and these each require different size and gauge. For example we have the plain knit one and one ribbed; also the tuck stitch one and one ribbed. We also have the plain knit, two and one ribbed; also the plain knit two and two ribbed.

The most common grade is the tuck stitch one and one rib. The stockings for a 12 year old boy must necessarily weigh more than for a 6 year old. I assume, however, that the goods are to average 2 1/2 lbs. per dozen. The correct sizes for the different ages are as follows:

Age 6 to 7 size, 6 leg, size 6½ foot.
Age 7 to 8 size, 7 leg, size 7 and 7½ foot.
Age 8 to 9 size, 7 leg, size 7½ foot.
Age 9 to 10 size, 8 leg, size 8 foot.
Size 10 to 12 size, 8 leg, size 8½ foot.

From this it will be seen that it is necessary to have only three sizes for the legs, 6, 7 and 8, which necessitates three sizes of ribbers. The correct sizes of the ribbers, number of needles and gauges are as follows:

Size 6 = 3 3/4 in. diam., 24 ga. dial, 18 ga. cyl., 66 needles dial, 66 needles cyl.
Size 7 = 4 in. diam., 24 ga. dial, 18 ga. cyl., 74 needles dial, 74 needles cyl.
Size 8 = 4 1/2 in. diam., 24 ga. dial, 18 ga. cyl., 84 needles dial, 84 needles cyl.

It is necessary to knit feet of all sizes from 6 1/2 to 8 1/2. This, however, necessitate having only three different sizes of footers as sizes 7 and 7 1/2 can be made on the same machine, also 8 and 8 1/2 on one machine. The correct sizes of machines, also the gauge and number of needles for footing on this class of work are as follows:

Size 6 = 2 1/2 in. diameter, 24 gauge, 84 needles.
Size 7 1/2 & 7 = 2 3/4 in. diameter, 24 gauge, 96 needles.
Size 8 & 8 1/2 = 3 1/4 in. diameter, 24 gauge, 112 needles.

Both plain and tuck stitch can be knit on the above machines with equally good results. If a two and one rib or two and two rib is desired the same footers can be used and the cylinders and dials in the ribbers only would have to be changed. If a two and two rib is desired the correct number of needles would be as follows:

Size 6 = 3 3/4 in., 36 gauge needles, 70 needles dial, 70 needles cylinder.
Size 7 = 4 in., 36 gauge needles, 78 needles dial, 78 needles cylinder.
Size 8 = 4 1/2 in., 36 gauge needles, 88 needles dial, 88 needles cylinder.

Merrill.

KNITTING MILL NEWS.

Knitting Mill News and Personals will be found in the general Mill News and Personal Departments this month.

Dyeing, Bleaching, Printing, Etc.

DYEING AND SCROOPING OF MERCERIZED COTTON YARN.

BY DR. LOUIS J. MATOS.

The handling of this class of yarns in the dyehouse does not differ materially from the methods usual for ordinary yarns, except that the dye baths must be given a little closer attention on account of the greater rapidity with which mercerized cotton takes up the color. For most shades usually dyed on mercerized cotton with the diamine or allied colors, and the temperature of the bath kept as low as possible, commencing in some cases cold, and gradually increasing as the yarn takes up the color from the dye bath. As mercerized cotton has a stronger affinity for the direct colors than ordinary cotton, to produce a corresponding depth of shade, less color would be used in dyeing the former.

In preparing a dye bath, where preliminary dye trials on a small scale had been carried out, and the exact quantities of proper colors thereby determined, there would be added to 250 gallons of water in the kettle about one quart of soluble oil per 100 pounds of cotton, and for light or medium shades, all the dyestuff, previously dissolved and strained. This straining of the dye solutions is important, though too frequently omitted, thereby causing in numerous instances spots which cannot be removed unless the entire batch of yarn is stripped. The yarn is entered and given two turns, then steam gradually turned on, the yarn being turned regularly meanwhile or else it will become "banded," that is, take up color and show horizontal marks where the submerged portions were being dyed while at rest. Where heavy shades are being dyed, it is always the best practice to add the dissolved colors to the dye bath in successive portions, lifting the yarn out in the interval.

While ordinary yarn requires the addition of common salt or Glauber's salt to the dye bath to carry the exhaustion as far as possible, with mercerized yarn, the presence of either of the above salts may be dispensed, especially for light shades. After dyeing has progressed for some little time, and the major portion of the color has been taken up, then several pounds of common salt may be added to facilitate the exhaustion of the bath.

The following quantities from practice will give an idea how the dye baths are prepared for dyeing this material:

For Medium and Dark Shades.

Soda Ash	¾ to 1½%
Glauber's Salt	5 to 10 %

For Tints and Pale Shades.

Soda Ash	up to ¾%
Soluble Oil	¾ to 1½%

For dyeing of blacks and very dark blues, the amount of soda ash may be 2 per cent. and to exhaust the bath as much as 15 per cent. of Glauber's salt, but it should be remembered that no more black should be added to the dye bath than is absolutely necessary to produce a clear shade on the cotton, even with the addition of salt as mentioned above, or else the skeins will show a distinct bronziness due to excess of color.

After dyeing, the cotton is lifted, drained and whizzed, when it is ready for drying or, if it is to be scrooped, is passed on to that part of the process. Generally, "scrooping" of cotton yarn is done for the purpose of imparting the peculiar handle that is characteristic of silk, but which, even when accomplished by the best known process, falls short of the true scroop of silk. The process is as follows:

The dyed yarn is passed for 15 minutes through a bath of 250 gallons of water at 100° F., containing 10 pounds of Marseilles or olive oil soap, then lift, drain and pass through a second bath at ordinary temperature containing 3 gallons of acetic acid, or 3/4 gallons of formic acid, the cotton being worked for 15 minutes, then lifted,

whizzed and dried as rapidly and as hot as possible. Instead of the two named acids, some dyes use about 6 pounds of commercial tartaric acid dissolved in the above bath.

If price permits, and a superior handle is desired, the cotton is worked in the soap bath as above, and afterwards in a fresh bath prepared with:

Tartaric Acid	lbs. 5
Glue	lbs. 3
Starch	lbs. 3

whiz and dry as rapidly as possible.

Another method of imparting a scroopy feel to cotton is to boil the yarn before dyeing with 5 per cent. of soda ash and 5 per cent. of soap. The most durable scroop, however, may be given to yarns after dyeing and rinsing by subjecting them to a treatment with 2 per cent. tannic acid and 1 per cent. antimony salt, and proceeding as described above.

In none of the acid treatments can the cotton be regarded as possessing any permanence; at best, the scroop will only remain until the material is first washed, when the cause of the scroop is completely removed.

DYEING WORSTED LININGS.

(By Our Special English Correspondent.)

A correspondent asks for a description of the methods and machinery used in dyeing worsted linings. He forwards a sample of a 4-and-1 cotton warp twill with a filling of single worsted such as is used for lining coats. Goods of the sort are known in Bradford as Beatrice twills and a very large business is done in dyeing them. The dyeing processes are simple and necessitate the use of no machinery other than that found in every properly appointed stuff and lining dyeworks.

In the pattern in question there is a brown warp and an olive filling. The piece has been cross-dyed; that is to say the cotton warp has been dyed before weaving and the worsted filling dyed later. The Bradford manufacturers of these goods have their warps delivered from the spinner to firms of warp dyers who dye the yarn to the appointed shade with a sulphur or direct cotton color, over the winch in the usual warp-dyeing machine. They get orders for a good many warps to a color and charge about 4 cents a pound. Most of these dyers have sizing machinery and they deliver to the weaving mill.

After weaving, the cloth is sent to one of the numerous commission dyehouses where the first operation is to pass the fabric over the crabbing machine. It is usual to use three-fold crabs for the purpose and some dyers have patent continuous crabs for taking six or more pieces at a time. After crabbing the cloth is set by steaming for twenty minutes or so and is dried upon the can-machine, preparatory to singeing. For singeing these goods the gas-flame machine is not thorough enough. It is necessary to use the singeing stove and to maintain the copper singeing bar at an equal white-red heat across its full length. The pattern in point has been singed on one side, but in better qualities of cloth it is common to treat both face and back.

From the singe-house the pieces go to the dollies where, unless they are in a very bad condition or have to be dyed to unusually light shades, they are given only a slight scour and are run, of course, in rope form The pieces are entered hot, in the usual way of wool dyeing, into an ordinary dyeing machine and are dyed in rope form. They are washed-off, partially dried in the hydro-extractor and dried upon the cans with a considerable amount of tension, to bring out the luster. They may then pass to the hydraulic press, preferably one with a 12 or 14-inch ram capable of exerting 3 or 4 tons to the square inch. The goods are hot-pressed between iron plates and papers and may then be considered finished.

It is not unusual to damp the cloth before pressing by passing it through a steaming machine as the transference from the moist to a dry state under heat and great pressure improves the luster and makes it more permanent. About 6 cents a pound is paid to Bradford dyers for blacks dyed and finished in this manner and a little more for colors. The work is done by men who do little else than dye linings and who have thus a culti-

vated judgment as to the tension and treatment which particular qualities will stand without injury. The sample sent with the inquiry is of a very low and bare quality and better results should be obtained with better materials to work on, if the routine here described is followed.

AN IMPROVED DRYING MACHINE.

A can drying machine, recently patented in this country is designed for the use of low-pressure steam. The inventor gives the following account of the improvements, which, he claims, result in a marked increase in the efficiency and steam economy of this class of dryers: Usually machines of this type are devised and constructed so that the steam used, having a pressure of several pounds, is supplied to the cans from branch pipes leading from a steam-main located at the front side of the machine and in continuous open communication with the front ends of the cans. Similar means are employed for discharging into an exhaust or return-main the water of condensation as well as uncondensed steam and vapor from the opposite ends of the cans. An objection to such machines is that they require the use of steam having considerable pressure, and that more or less of it will flow through the individual cans directly into the return-main without first having given off the number of heat units which should have been utilized for heating the cans, thereby correspondingly reducing the efficiency of the machine. A further disadvantage is that such escaping steam and water passes directly into the atmosphere, or to waste.

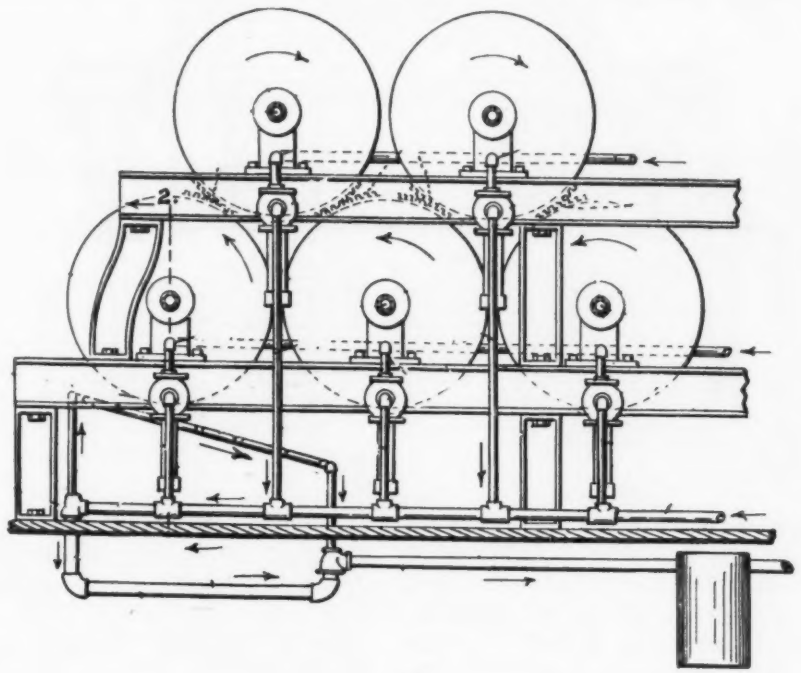


FIG. 1.

The object of the new construction is to provide drying-machines with means for materially increasing their efficiency, and in which said advantageous results are attained or effected in a comparatively inexpensive way. To this end low pressure steam is employed, having say a fraction of a pound, or even minus pressure. The water of con-

densation and vapor discharged from each can first flows into an independent air-vented water-seal device. The water then overflows or passes from the seal by gravity into a horizontally disposed exhaust pipe, common to all the seals.

At the front or "wet" end of the machine and below the lower cans, is located a combined heating and condensing-coil or barometric condenser having its upper or intake end connected with the upper portion of a head or fitting, constituting a separating chamber, into which the exhaust pipe discharges. The pipe is disposed below the condenser. The return main is in turn located below the exhaust pipe and condenser and connected with them so that the water flows into the main by gravity action. The main is also provided with a water-seal and separator, arranged to prevent the entrance of steam or vapor into the main from the condenser and exhaust pipe.

A drying machine embodying those improvements may be operated with greater efficiency and economy, since steam having materially lower or even atmospheric pressure may be used, and also owing to the fact that any steam or vapor discharged from the cans is condensed in the coil and its heat utilized. By this arrangement, any steam or vapor freed from the water flows into the coil, where it is condensed, while the water itself falls by gravity into the return main, into which the water condensed from the steam or vapor in the coil also flows. The water may then be discharged from the return main directly into the atmosphere, or into a hot-well, as desired. As thus devised, each steam heated can or cylinder is, as it were, wholly independent of the other cylinders in the matter of exhaust action. The improved device is connected with the exhaust end of the cylinders so that any discharged steam or vapor, as well as vapor evaporated from the water of condensation discharged from the cylinders, is prevented from returning, and flows into and along an exhaust pipe common to all and enters a combined radiator and condenser located above the pipe, where the latent heat from the steam or vapor is utilized as an auxiliary drying means. The water thus precipitated, as well as the main volume of water of condensation, is trapped and passes by gravity action into the return main proper.

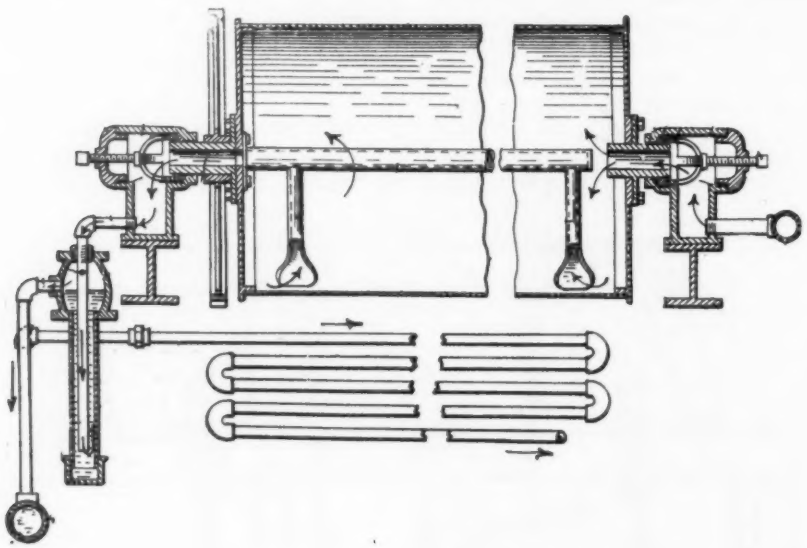


FIG. 2.

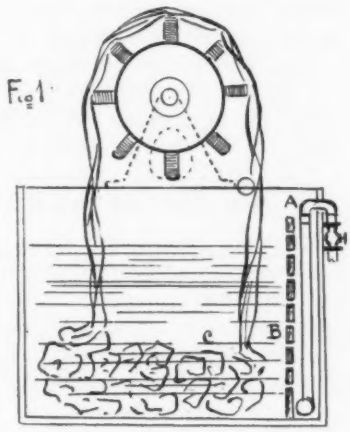
Fig. 1 is a partial rear elevation of the front or "wet" end of the improved drying machine; Fig. 2 is an enlarged transverse sectional view, taken on line 2 2 of Fig. 1.

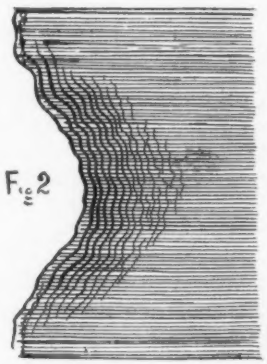
FAULTS AND DEFECTS IN CLOTH FINISHING.

BY SERGIUS.

(From the Dyer and Calico Printer.)

The operation of weighting when carelessly performed may result in faults appearing which seem to indicate slipshod dyeing.





An example of this is seen when one list or selvage of the fabric comes up darker in shade than the other. Speaking generally, this defect is put down to the dyer, but is actually caused by either faulty blowing previous to dyeing or by dirt settling into the lower list while draining after roll boiling. Irregular supply of steam to a rolled piece whereby one side gets overblown and the other insufficiently, causes one portion to absorb dye in excess of the other, with the result of showing a dark and light side.

A very similar effect is produced by running cloth through a weighting solution which has not been properly stirred up; as the bath is used up, the attendant's duty is to replenish it with liquor, keep up a uniform strength and also to see it is well stirred. The latter item is sometimes neglected, with the result that one side of the fabric absorbs stronger liquor and when dried appears much darker.

This uneven weighting may be cured by washing the cloth with hot water, swinging well in the centrifugal and giving another passage through the weighting bath. Most weighting liquors have a very high specific gravity, and, unless well stirred, will form heavy layers at the bottom and sides of the bath. If added to the bath at one side they will require a considerable length of time to diffuse unless assisted by vigorous stirring. Such a cause for producing faults seems so trivial as to be hardly worth mentioning, but nearly all defects and ailments arise in the first instance from some trifling omission, while the task of tracing out the source is by no means easy.

CHALK MARKS ON GREYS.

Manufacturers are fond of marking grey goods with colored chalks, denoting lengths, weights, qualities and loom marks, and these are frequently increased by the burlers and menders who chalk out places where there are missing picks. In the majority of cases these chalk marks disappear in scouring or dyeing, but the writer has come across instances where serious stains have formed from this cause alone and have been practically indelible. Some time ago an instance of this kind cropped up where the marks had turned to a deep brown nearly

approaching black, which of course showed through in blues and light colors.

On investigating the facts, the chalk marks were found to be originally a bright orange red which on steaming turned dark brown. All reds did not change in this process, but only those of an orange shade, which pointed to differences in the composition of the chalk. On testing the suspected chalk in bulk, it was found that orange chromate of lead entered largely into the composition, which, under the combined action of moisture and heat in crabbing, united with the natural sulphur in the wool fibers to form lead sulphide. The harmless reds were found to be mostly aniline colors with a base of china clay or some other neutral body. For marking grey cloth the most fugitive dyes are the safest to make into crayons; basic colors such as magenta, safranine, methylene blue and methyl violet, are specially suitable. Colors containing lead, iron, copper or chromium, should be avoided.

CHAFES.

These faults appear in fine faced woolens or in worsteds, and do not show in the rougher cloths. They are caused by the cloth getting fast either in washing machine or dye vessel, and the abraded appearance is due to the friction of the moving rollers on a stationary fabric. For this complaint there is no cure. It may, to a slight extent, be improved by very careful cutting, helped out by the use of glass paper, but at the best the results are never very satisfactory. Thin and fine cloths are the most given to getting fast, and it is these naturally which chafe quickly, as the heavier weights run easier and are kept straight by their weight and bulk. Having too large a bulk of liquor in scouring or dyeing processes is a fruitful cause of this fault, as the fabric then floats about and has every chance of entanglement.

TENDERING.

Fine wool cloths are more subject to this serious defect than those of coarser wool, and the fault may be due to several causes. Prolonged boiling will bring it about, as also will severe treatment in decatizing; in fact, hot steam blown forcibly through a rolled fabric quickly makes it tender and imparts a papery handle. Acids are less dangerous than alkalies, especially when hot, but either is likely to tender a cloth which is not washed thoroughly, and alternate baths of acid and alkali are the worst things it is possible to apply, since one appears to aggravate the effects of the other.

Excessive raising will also weaken a fabric, as this draws fibers out of the threads which would serve to hold it together. If decatizing follows raising, the cloth is weakened still further. Unions lose strength in raising at a greater rate than all wool cloths, as the wool is the only part which forms the cover, and often a union will be sound enough the way of the warp when that is cotton, and very tender across the lay of the weft.

(To be continued.)

COMMERCIAL FORMIC ACID.

Gradually this product has gained for itself a permanent position in the list of chemicals in spite of several obstacles, the most important of which was its high cost of production in comparison with the common acid which it is gradually displacing for many purposes, namely acetic acid.

Formic acid belongs to the same group of acids that acetic acid does, in fact, is its next neighbor and second on the list. Formic acid has the chemical formula CH_2O_2 and acetic acid is $C_2H_4O_2$. Formic acid is produced now on a large scale by distilling a suitable mixture of oxalic acid and glycerine, while acetic acid is the one of the products obtained from the dry distillation of wood.

In dyeing, its most important use is as the assistant in chrome mordanting of wool where it takes the place of tartar, causing an almost complete taking up of the chrome by the fiber. The decomposition is so complete that the dyer is enabled to use one-third less chrome, with, however, a slight increase in the amount of formic acid over the tartar. The result, however, has a far greater bearing, because with complete chrome exhaustion of the mordanting bath, the same liquor may be used for the dye bath by simply cooling down by the addition

of cold water and adding the previously dissolved dyes, then about 2 per cent. fresh formic acid, and finally entering the mordanted material. This saves one washing and the consequent handling of the goods.

In dyeing woolen goods containing silk effects, formic acid offers the advantage that the dyeings are more level, and the possibility of the silk threads becoming stained is reduced to a minimum. One advantage formic acid possesses over certain qualities of acetic acid is its ease of washing out readily without leaviug any tar-like odors.

As acetic acid is but seldom required for the dyeing of cotton and wool goods, and as sulphuric acid is often required, the advantage possessed by formic acid is its freedom from injurious action on the cotton, as is often the case when sulphuric acid is used.

In silk dyeing formic acid is not much used, but as a substitute for sulphuric and tartaric acids in imparting scroop it is gaining.

The several formates, corresponding to the acetates, are now being tried out by dyes, and owing to the greater stability of some of them, there is no doubt but that a few will be adopted in course of time. As they are easily decomposed by steam, they seem to offer at least equal advantages for printing cotton goods.

Formic acid, like acetic acid is bought for so much per pound, the strength being shown by the hydrometer; as a rule an 85 per cent. solution is sold. The following table indicates the strength in percentage of real formic acid for the corresponding specific gravity.

FORMIC ACID.

Per Cent. By Weight	Specific Gravity	Per Cent. By Weight	Specific Gravity
5	1.0116	55	1.1321
10	1.0247	60	1.1425
15	1.0371	65	1.1544
20	1.0489	70	1.1656
25	1.061	75	1.177
30	1.073	80	1.1861
35	1.0848	85	1.1954
40	1.0964	90	1.2045
45	1.1086	95	1.2141
50	1.1208	100	1.2213

As the common commercial strength of formic acid is 85 per cent., and that of acetic acid is 30 per cent., 70 parts of formic acid will correspond in acid efficiency to 190 parts of acetic acid, along the lines indicated above.

Dye Recipes

The following recipes appear in the Dyers' Supplement, which is issued each month by the TEXTILE WORLD RECORD. The Supplement contains the colored samples, dyed according to recipes given. The selection of samples is carefully made, and it is the aim to show shades which are of especial interest to the dyer, and which the requirements of the market demand. The Dyers' Supplement is a 16-page pamphlet, in convenient form for preservation. Subscription price for the Dyers' Supplement $1.00 per year.

Recipe No. 161.

Brown on Worsted Yarn.

Fast Chrome Brown 3 B on 100 lbs. worsted yarn. First mordant the yarn in a bath made up with

3 lbs. Potassium Bichromate.
2 lbs. Tartar.

Enter the material at 140° F., and mordant at a boiling temperature for 1 1/2 hours. Then wash and dye in a bath made up with

6 lbs. Fast Chrome Brown 3 B
(C. Bischoff & Co., 451 Washington St., N. Y.)
1 lb. Acetic Acid

entering cold and bringing slowly to a boil and dyeing at a boiling temperature for from 1 to 1 1/2 hours. Fast Chrome Brown 3 B when dyed in this way will be found to possess excellent fastness to light and washing.

Recipe No. 162.

Orange on Cotton Yarn.

Helindone Orange D on 100 lbs. cotton yarn. Prepare the dye bath with

10 lbs. Helindone Orange D.
(H. A. Metz & Co., 122 Hudson St., N. Y.)
3¼ lbs. Caustic Soda Solution, 40° Be.
12 lbs. Glue Solution, 1-10.
1¼ lbs. Hydrosulphite M L B Conc. Powder.

The dyestuff should be mixed thoroughly with five times its weight of water together with the caustic soda. The hydrosulphite powder being added last and thoroughly stirred in. After this stock liquor has been added to the bath, heat to 140° F., and dye the yarn for 1/2 hour on bent wooden sticks below the surface of the liquor. After the dyeing is completed the yarn is wrung out evenly and allowed to oxidize in the air for some time, and the color finally developed by soaping for 1/2 hour at a boil in a bath containing 2 parts of soap to 1,000 parts of water. Helindone Orange D produces an orange shade which possesses the usual fastness of the Helindone colors. It possesses high coloring power for a dyestuff of this group. It is well suited for combination with other Helindone colors.

Recipe No. 163.

Black on Cotton Yarn.

Nerole Black G R on 100 lbs. cotton yarn. Prepare the dye bath with

5 lbs. Nerole Black G R.
(Innis, Speiden & Co., 46 Cliff St., N. Y.)
25 lbs. Common Salt.

Enter at 180° F., and dye at a boil for one hour. Nerole Black G R may be employed to advantage in the dyeing of cotton and wool union material.

Recipe No. 164.

Green on Worsted Yarn.

Wool Green C on 100 lbs. worsted yarn. Prepare the dye bath with

1 lb. Wool Green C.
(Kalle & Co., 530 Canal St., N. Y.)
10 lbs. Glauber's Salt.
1 lb. Sulphuric Acid.

Dye at a boil for 3/4 of an hour. Wool Green C possesses very good fastness to light, is level dyeing, and will be found valuable in the production of compound shades.

Recipe No. 165.

Brown on Worsted Piece Goods.

Amazo Golden Brown on 100 lbs. wool cloth. Prepare the dye bath with

348 grs. Amazo Blue.
(American Dyewood Co., 84 William St., New York City.)
3 ozs., 87 grs. Amazo Brilliant Red 2 B.
1 lb., 11 ozs. Amazo Fast Yellow.
20 lbs. Glauber's Salt.
3 lbs. Sulphuric Acid.

Enter lukewarm, raise to a boil and boil for one hour. The Amazo colors are especially adapted for the production of fashionable shades on worsted piece goods.

Recipe No. 166.

Blue on Mercerized Cotton Yarn.

Brilliant Copper Blue G W on 100 lbs. mercerized cotton yarn. Prepare the dye bath with

3 lbs. Brilliant Copper Blue G W.
(Berlin Aniline Works, 213 Water St., N. Y.)
20 lbs. Glauber's Salt.
2 lbs. Soda Ash.

Enter at 120° F., and dye just under a boil for one hour, then after treat in a bath made up with

3 lbs. Copper Sulphate.
1 lb. Acetic Acid.

Brilliant Copper Blue G W when after treated with copper sulphate possesses excellent fastness to light, but only moderate fastness to washing.

Recipe No. 167.

Yellow on Cotton Yarn.

Prepare the dye bath with

5 lbs. Cross Dye Yellow R.
(Read Holliday & Sons Co., 11 Gold St., N. Y.)
2 lbs. Soda.
50 lbs. Common Salt.

The boiled out yarn is entered just below the boil, given two turns, then dyed for one hour at a gentle boil. Cross Dye Yellow R has good leveling properties.

Recipe No. 168.

Red on Worsted Piece Goods.

2 lbs., 12¾ ozs. Amazo Crimson.
(Am. Dyewood Co., 84 William St., N. Y.)
2 lbs., 12¾ ozs. Amazo Brilliant Scarlet L.
1 lb., 3⅝ ozs. Brilliant Red 6 B.
140 grs. Amazo Brilliant Blue G.
20 lbs. Glauber's Salt.
3 lbs. Sulphuric Acid.

Enter lukewarm, raise to a boil and boil for one hour. Amazo colors are especially adapted for the production of fashionable shades on worsted piece goods.

Recipe No. 169.

Yellow on Cotton Yarn.

Prepare the dye bath with

5 lbs. Cross Dye Yellow Y.
(Read Holliday & Sons Co., 11 Gold St., N. Y.)
2 lbs. Soda.
50 lbs. Common Salt.

The boiled out yarn is entered just below the boil, given two turns, then dyed for one hour at a gentle boil. Cross Dye Yellow Y has good leveling properties.

Recipe No. 170.

Brown on Worsted Yarn.

Fast Chrome Brown 3 B on 100 lbs. worsted yarn. Prepare the dye bath with

8 lbs. Fast Chrome Brown 3 B.
(C. Bischoff & Co., 451 Washington St., N. Y.)
5 lbs. Acetate of Ammonia.

Enter at 120° F., and dye at a boil for 1/2 hour and then add

3 lbs. Acetic Acid

and continue the boiling 1/2 hour longer. Then add

1 lb. Sulphuric Acid

and continue the boiling for 1/2 hour longer. Finally add

3 lbs. Potassium Bichromate,
1 lb. Acetic Acid,

and boil for one hour.

Fast Chrome Brown 3 B when dyed in this way will be found to possess excellent fastness to light and washing.

Recipe No. 171.

Orange on Cotton Yarn.

Diamine Nitrazol Orange R on 100 lbs. cotton yarn. Prepare the dye bath with

3 lbs. Diamine Nitrazol Orange R. (Cassella Color Co., 182 Front St., N. Y.)
1 lb. Soda Ash.
20 lbs. Glauber's Salt.

Dye at a boil for one hour. Rinse and couple with Nitrazol C by working in a bath, at ordinary temperature, made up with

3 lbs. Nitrazol C.
¾ lb. Soda Ash.
¼ lb. Acetate of Soda.

Diamine Nitrazol Orange R possesses very good fastness to washing and is sufficiently fast to light for all ordinary purposes.

Recipe No. 172.

Blue on Worsted Yarn.

Acid Chrome Blue R on 100 lbs. worsted yarn. Prepare the dye bath with

3 lbs. Acid Chrome Blue R. (Farbenfabriken of Elberfeld Co., 66 Lafayette St., N. Y.)
20 lbs. Glauber's Salt.
3 lbs. Acetic Acid.

Enter at 140° F., bring slowly to a boil and dye at a boil for 1/2 hour. Then add

2 lbs. Sulphuric Acid

and boil for one hour longer. When the dyestuff is exhausted add

1½ lbs. Potassium Bichromate

and continue the boiling for 40 minutes.

Acid Chrome Blue R possesses very good fastness to light, washing, alkali, perspiration, rubbing and good fastness in other respects. It leaves white cotton effect threads untinged, as well as scarcely effecting white silk threads.

Recipe No. 173.

Reddish Brown on Cotton Yarn.

Immedial Red Brown 3 R on 100 lbs. cotton yarn. Prepare the dye bath with

10 lbs. Immedial Red Brown 3 R. (Cassella Color Co., 182 Front St., N. Y.)
10 lbs. Sodium Sulphide.
3 lbs. Soda Ash.
1 lb. Glue.
30 lbs. Glauber's Salt.

Dye at a temperature just below the boil for one hour. Immedial Red Brown 3 R possesses good fastness to washing and light, and especially good fastness to acid.

Recipe No. 174.

Orange on Cotton Yarn.

Paranol Orange on 100 lbs. cotton yarn. Prepare the dye bath with

½ lb. Paranol Orange. (E. M. Thayer & Co., 411 Atlantic Ave., Boston.)
5 lbs. Common Salt.

Dye at a boil for one hour.

Paranol Orange possesses the usual properties of the substantive colors, and is particularly useful where bright yellowish shades of orange are desired.

Recipe No. 175.

Blue on Mercerized Cotton Yarn.

Brilliant Copper Blue B W on 100 lbs. cotton yarn. Prepare the dye bath with

3 lbs. Brilliant Copper Blue B W. (Berlin Aniline Works, 213 Water St., N. Y.)
20 lbs. Glauber's Salt.
2 lbs. Soda Ash.

Enter at 120° F., and dye at a boil for one hour. Then after treat at a boil for 1/2 hour in a bath made up with

3 lbs. Copper Sulphate.
1 lb. Acetic Acid.

Brilliant Copper Blue B W when after treated with copper sulphate possesses excellent fastness to light, but only moderate fastness to washing.

Recipe No. 176.

Violet on Cotton Yarn.

Kryogene Violet 3 R X on 100 lbs. cotton yarn. Prepare the dye bath with

5 lbs. Kryogene Violet 3 R X. (Badische Co., 128 Duane St., N. Y.)
10 lbs. Sodium Sulphide, Crystals.
5 lbs. Soda Ash.
10 lbs. Common Salt.

Enter at 180° F., and dye at a temperature just below the boil for one hour.

Kryogene Violet 3 R X possesses good fastness to light, acids, alkali and washing.

New Machinery and Processes

This department is designed to present from month to month a brief mention of new machinery, devices and processes being brought out in this country and abroad, that are of interest to the textile manufacturers. It is not a list of patents but of improvements on the market, the idea being to present to our readers a systematic monthly record of new machinery, etc., of interest to textile mill men.

Whenever possible we endeavor to make a personal investigation of the new machinery and processes described in this department. In the absence of such personal investigation we must necessarily rely upon information obtained from those who control the machines and processes.

We invite machine builders and others to send us such information for this department.

Earthen Ware Jig Rolls. Cell Drier Machine Co., 147 Milk St., Boston, Mass., are introducing into this country a porcelain jig roll, an English invention which has been used successfully in European dye houses for a number of years. An account of the roll will be found in this issue.

Cloth Cutting Machine. Jones & Hardy, Hudson, N. Y., are putting on the market a cloth cutting, folding and winding machine for cutting sateens, cambric, silesias or any fabric used for fronts, button stays, facings, etc., for underwear. In one operation the machine cuts, folds and rolls the strips separately. The edges are ironed down smoothly or embossed, as desired, ready for use in the finishing room. It is equipped with an automatic measuring device which stops the machine at any length desired up to sixty yards.

"Duron." The Amid Duron Co., 100 William St., New York, are introducing a product called "Duron" which is used for making oil emulsions for wool preparatory to carding and combing.

Heilmann Comber. Emile Fouan, Lille, France. An attachment for separating noils and dust and automatically removing each from the combing machine by means of endless screws.

Singeing Yarn. Gebrueder Wagner, Kirchentellinsfurt, Germany. An improved machine for singeing yarn which is said to give very uniform results.

Mixed Yarn. Emil Claviez, Adorf, Germany. A process of manufacturing yarn composed of mixtures of paper and textile fibers. All paper yarn has but a very limited use and it is claimed that the yarn made of mixtures of paper and textile materials can be used in a wider range of goods.

Automatic Thread Guide for Winders. The Corley Textile Specialty Co., Empire Bldg., Atlanta, Ga., is putting on the market the Corley automatic thread guide for cone winders.

Anti-Smoke Bars for Boiler Furnaces. The Mellor Furnace Engineering Co., 608 Chestnut St., Philadelphia, is putting on the market Mellor's anti-smoke bars, an invention of D. Mellor, which when applied to a boiler furnace acts as a smoke consumer and fuel economizer. They are made in two types, one designed for efficiently burning bituminous coal, eliminating smoke nuisance and producing more steam and saving fuel. Mellor's Climax bars are designed for any grade of anthracite fuel. Further information may be had from the company concerning their improved boiler furnace equipment.

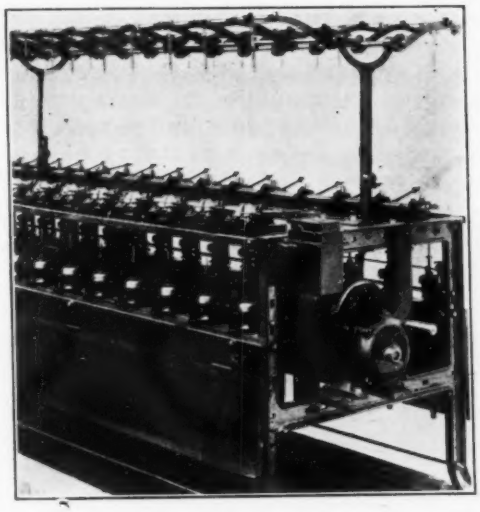
Tension and Cleaner for Spoolers. Arthur Fischer, Augsburg, Germany. A combined tension and cleaner for warp spoolers which has been in successful use in a number of mills.

Dobby Motion. Ward Bros., Blackburn, Eng. An improved dobby motion for looms, one of the objects being to eliminate the teeth in the jacks and thus increase the durability and prevent defects in operation.

Wool Drying Machine. John and William McNaught, Rochdale, Eng. A drying machine provided with seven chambers through which the wool is carried by a blast of hot air, there being no apron or mechanical carriers used.

A NEW MOTOR-DRIVEN QUILL WINDER.

The 40-spindle quill winder shown by the accompanying illustration is the first motor driven machine of its type made by the Oswald Lever Company, Philadelphia, Pa. The motor is securely fastened to the machine frame. The driving connection is through



NEW MOTOR DRIVEN OSWALD QUILL WINDER.

single gear reduction to the shaft of the winder. This application marks another step in the adaption of electric motors to the silk industry.

The motor is specially designed for textile service and is designated as "textile type." It has dust proof bearings and a dust proof rotor; that is, no ventilating ducts are provided. In spite of the absence of all rotor ventilation, however, the distribution of material is such that the motor operates exceedingly cool. It is rated at 1/2 horse power, 1,140 r. p. m. for use on a 3-phase, 60-cycle, 220-volt circuit. Being of the squirrel cage induction type, the motor has no commutator, collector rings, or other exposed current carrying parts. The equipment includes an enclosed "textile type" switch, which is operated by means of the shipper handle, thus placing its control within easy reach of the operator from any part of the machine. Both motor and switch are made by the Westinghouse Electric & Mfg. Company.

A LARGE ALTERNATING CURRENT CIRCUIT BREAKER INSTALLATION.

BY D. S. MORGAN

The construction of a circuit breaker for use on heavy alternating current circuits presents a somewhat difficult problem to the designing electrical engineer. To ensure the distribution of the current uniformly throughout the various parts of the breaker and the avoidance of skin effect, energy losses in heating, etc., requires very skillful designing.

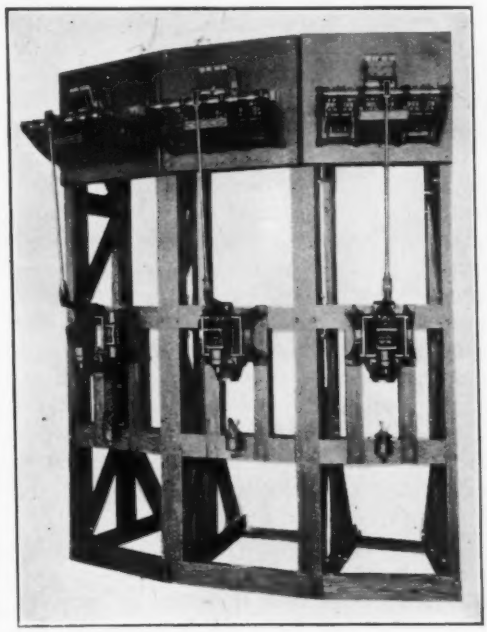


FIG. 1. ALTERNATING CURRENT CIRCUIT BREAKER.

The largest alternating current circuit breaker yet built, Fig. 1, is installed in the worsted mills of the American Woolen Co. at Lawrence, Mass., and protects a 600 volt, 40 cycle turbo alternator. It is a triple pole solenoid operated, type C, Form K-2 breaker built by the General Electric Company, and has a current carrying capacity of 12,000 amperes continuously without overheating.

If a circuit breaker for use on heavy alternating current circuits of 6,000 amperes and over were built on the lines of usual direct current construction it would not perform its work satisfactorily and would heat to a dangerous degree in service. To avoid this, special construction must be employed.

In the design of the circuit breaker in question, a large amount of radiating surface was provided and uniform distribution of the current throughout the various parts was ensured by subdividing the contact brushes and the studs of each pole into six sections, each section insulated from the others. Each pole of the circuit breaker is operated by a separate solenoid mechanism so connected that the entire triple pole breaker is controlled by a single control switch on the switchboard panel. The open and closed positions of the breaker are indicated by pilot lamps located at the controlling switch.

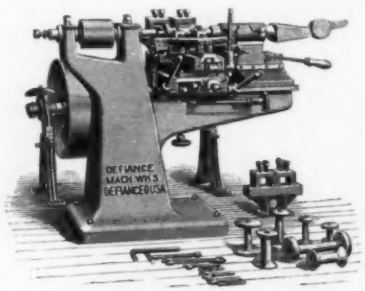
To obviate the necessity of opening an arc at the control switch, the circuit of the closing coils is opened by relays located near the circuit breaker after the latter closes. The circuit breaker trip coils are opened by auxiliary switches on it, which open when the breaker itself opens. The device is made automatic by the use of current transformers and relays. The circuit breaker, solenoids and control relays are mounted on specially designed hard wood supporting framework made to conform to the perimeter of the turbine to which the framework is secured.

The breaker has now been in service for several months and is operating satisfactorily. This, however, is not more than was expected because, before shipment, after being well tried out for purposes of adjustment and to discover any weak points in construction, the breaker was subjected to thorough mechanical endurance tests under conditions much more severe than it could possibly be expected to endure in actual service.

The exports of woolen dress goods from Plauen to the United States were valued at $715,391 in 1909, compared with $507,006 in 1908.

THE DEFIANCE SPOOL TURNING LATHE.

The lathe shown in the accompanying illustration is in operation in a number of spool factories as well as textile mills making their own spools. It is built by the Defiance Machine Works, Defiance, O., and specially designed for turning spools of widely different kinds and sizes, including the warp and taper head thread spools. It receives the spool blank, rounds the flanges, finishes the sides and trues the barrel complete. It is furnished for turning warp spools only, or with taper head thread spool attachment, as shown in the illustration. In



THE DEFIANCE SPOOL TURNING LATHE.

turning the warp spools, the tool holder shown on the floor is used in place of the one shown in the machine.

All parts are fitted with great accuracy. The sliding surfaces are scraped to bearings. The gears and racks are cut from the solid, and bronze bearings such as are used in engine lathe construction are employed. This, together with the substantial manner in which it is built, renders it capable of producing a large amount of perfect work.

The frame, of original design, is a heavy casting in one piece, with cored center, and a broad floor base to stand firm. It is of sufficient strength to do the heaviest work in spool making, and make the work smooth, free from chatter marks.

The head spindle of forged steel rotates in heavy self-lubricating bronze bearings made in halves, to take up for wear, with a bronze screw at the rear end to prevent end play. These boxes are fitted to the frame in square openings which are scraped to fit with heavy steel plates to hold them in posi-

tion. The tail stock is fitted to the top of the frame in planed and scraped angle ways, with a horizontal adjustment on the frame to and from the head spindle for short or long work. Its spindle is provided with a quick horizontal movement by hand lever to hold or release the work between the centers and it is self-locking when thrown in either direction.

The carriage which supports the cutters is provided with every necessary adjustment and movement to accommodate spools of every size and shape. The taper turning attachment can be quickly placed in or out of the machine by simply loosening several screws and the tool holding device for warp spools, as shown at the base of the frame, is held in the carriage by the same screws.

The work to be turned is held between centers of special design, so made to center the work by the hole in the object to be turned, requiring no skill on the part of the operator to place the work into the machine correctly.

Imports into Porto Rico for 1909 of cotton cloth manufactured in the United States amounted to 44,154,620 yards, valued at $2,451,642, and the value of other cotton goods was $1,230,682, making a total of $3,682,324. Imports of all classes of cotton goods from other countries were valued at about $68,000.

CHAIN DRIVES IN TEXTILE MILLS.

One of the important developments in power transmission during recent years has been that of the chain drive. Although probably the first method of transmitting power, it is only within the past ten years that this drive has been adapted for large powers at high speeds and with practically no noise. These objects combined with the necessary degree of durability have been attained by the use of a chain made of multiple plates and joints composed of two parts. This construction is shown at Fig. 1, which is a view of the Morse silent chain, with one joint exposed, manufactured by the Morse Chain Co., Ithaca, N. Y. The use of multiple-plate links enables the chain to be adapted for large powers by simply increasing the width, while the two-part joint with its rocking motion displaces all sliding motion and the objectionable friction and wear.

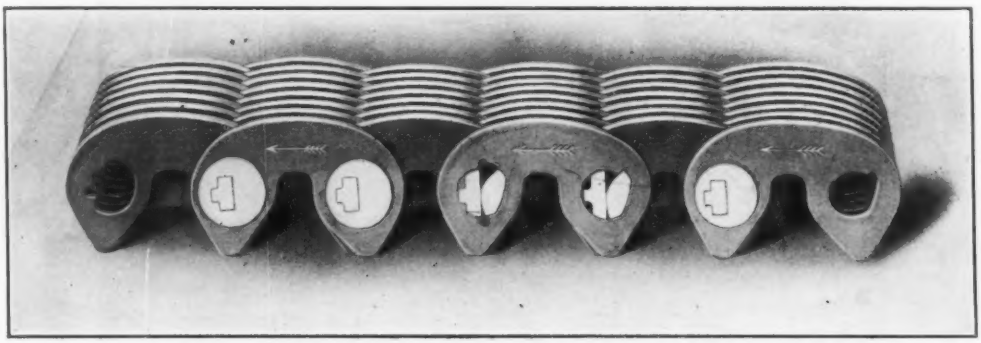


FIG. 1. THE MORSE CHAIN SHOWING JOINT EXPOSED.

All this means that a new and improved method of transmitting large powers at high speed has been provided. Many power users know this and have for years been substituting the chain drive for belts and gears. At the present time about 500,000 h. p. is being transmitted by Morse chains. This chain has been extensively introduced into textile mills and we learn that at the present time in New England alone over 600 spinning frames are being driven by Morse chains from individual motors. In addition textile manufacturers are driving line shafting,

pumps, exciters, air compressors, pickers and other machines in this manner.

One application of this chain which well illustrates its advantages, is the driving of twist gears and rollers of worsted spinning frames from the drum shaft. It has been found that because of the positive drive a larger production and absolutely uniform twist in the yarn are obtained. Fig. 2 shows a worsted spinning frame on which the Morse chain is used for driving twist gears. Fig. 3 is a view of worsted spinning frames driven by chains from individual motors. There are sixty frames driven by Morse chains in this room, showing a service of 15,000 hours with the same chains, which have required no attention other than occasional lubrication. We are informed that no other form of power transmission has ever equaled this record for this service. Fig. 4 is a view of a cotton twister frame driven by the Morse chain. A cotton picker is shown at Fig. 5. A frequent use of the chain drive is for driving pumps, and at Fig. 6 is seen a triplex pump connected to an individual motor in this way. Large powers are transmitted with equal success. Fig. 7 shows a Morse chain which carries 500 h. p. from the engine to a counter shaft.

These illustrations could be continued indefinitely, but these already given will serve to show the many uses to which the silent chain drive can be put in textile mills. It is manufactured in various sizes from the 1/2 inch P chain for light loads to the 3 inch P chain suited for loads up to 2,000 h. p.

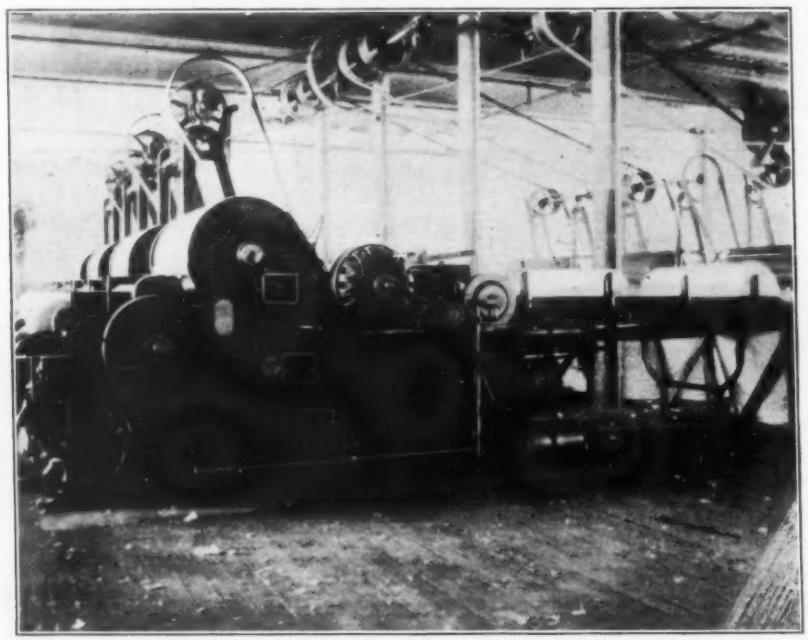


FIG. 5. A COTTON PICKER DRIVEN BY THE MORSE CHAIN.

We recently visited a worsted mill in which the combing department was driven by a Morse chain from a 100 h. p. motor. This drive, which is shown in Fig. 8, had given approximately 6,000 hours' service to date with complete satisfaction. It was put in to replace a double reduction belt drive and the high efficiency of the Morse chain effected the remarkable saving of 17 per cent. of the power consumption of this motor. These chains require no attention other than to keep them smeared with grease. They run

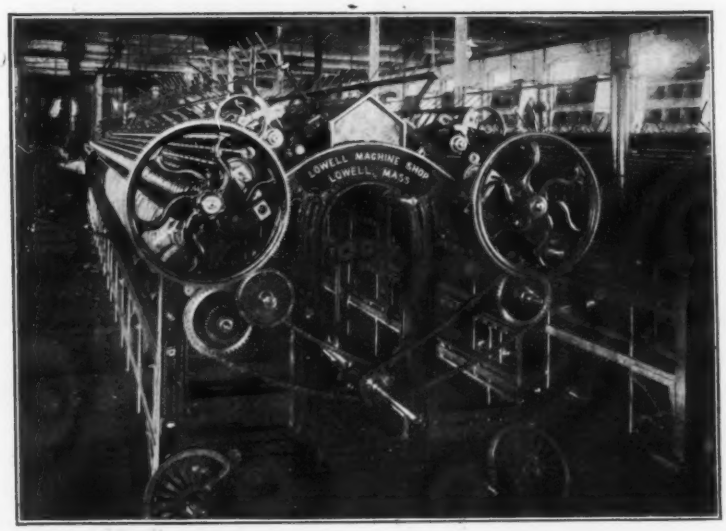


FIG. 2. AN ADAPTATION OF MORSE SILENT CHAIN TO CONNECT CYLINDER SHAFT WITH FRONT ROLLS ON WORSTED SPINNING FRAME.

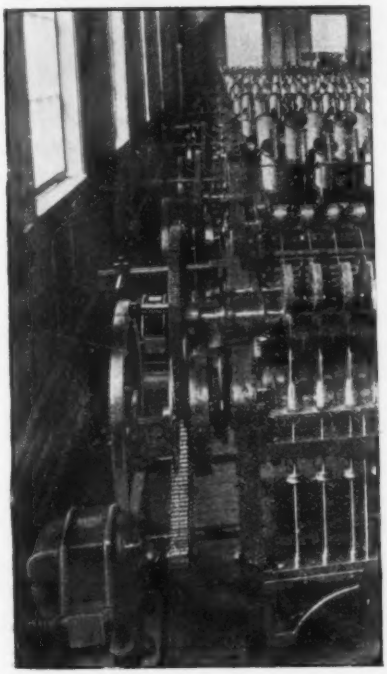


FIG. 3. WORSTED SPINNING FRAMES DRIVEN BY MORSE CHAINS FROM INDIVIDUAL MOTORS.

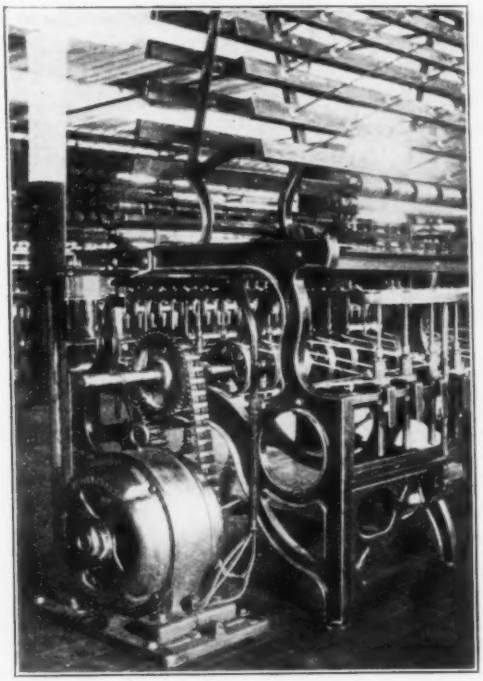


FIG 4. A COTTON TWISTER FRAME DRIVEN BY THE MORSE CHAIN.

with no objectionable noise, are positive and possess a flexibility that is lacking in gears. Their durability is demonstrated beyond question by the many chains that have been

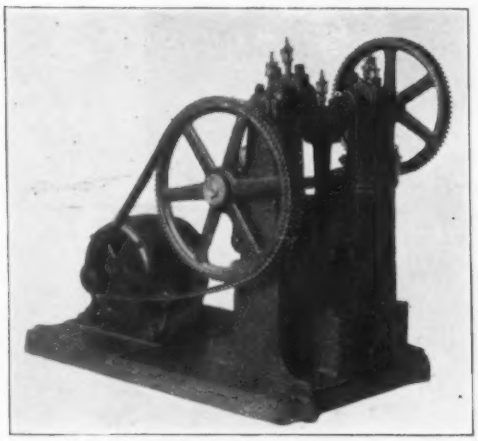


FIG. 6. DRIVING PUMPS WITH THE MORSE CHAIN.

running for a number of years with little wear and one of the large users of the Morse chain for textile service recently stated to us that the chains would pay for themselves by the saving in power and repairs in three years. In the mills where we have seen these drives in operation we found they had won the favor of the operatives and mechanics to a remarkable degree.

Those interested in this system of flexible

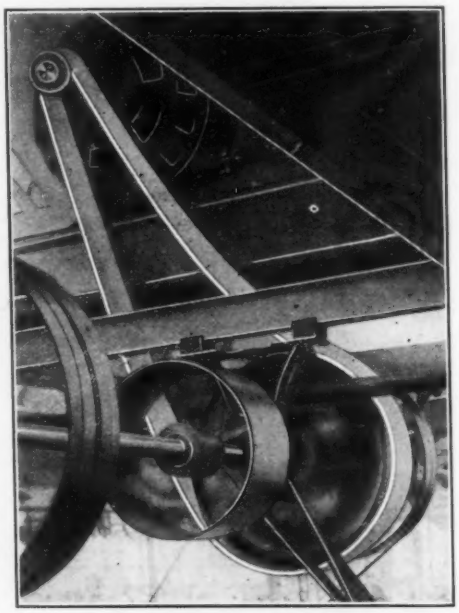


FIG. 8. A COMBING DEPARTMENT IN A WORSTED MILL DRIVEN BY A MORSE CHAIN FROM A 100 H. P. MOTOR.

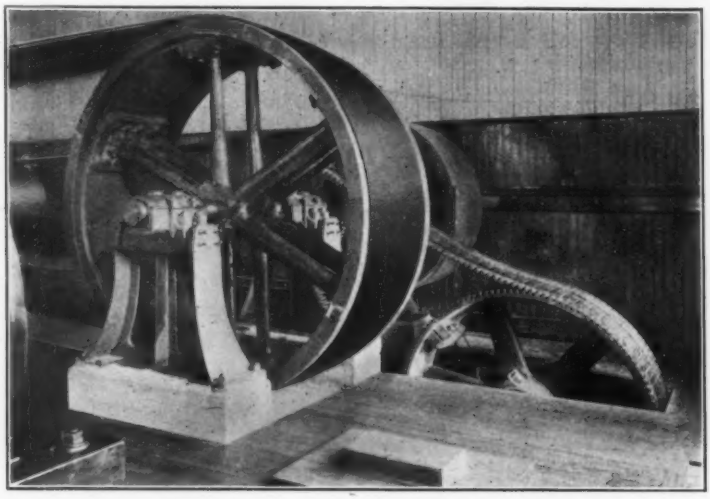


FIG. 7. SILENT CHAIN DRIVE, CONNECTING ENGINE WITH COUNTERSHAFT.

gearing can obtain full information by applying to the Morse Chain Co., 141 Milk St., Boston, Mass., where many testimonials, obtained in the ordinary course of business, can be seen. From these we quote the following:

1. The 20 h. p. Morse silent chain is used to drive a 24-inch diameter by 6-inch stroke vacuum pump for a vacuum sweeping system, as manufactured by the Sanitary Devices Co., in San Francisco, Chicago and New York. The Morse silent chain drive operates very satisfactorily, and we have found by comparative tests that with the Morse drive a saving in power of from 15 to 20 per cent. is effected over power required for operation by belt drive. Another advantage is that the chain drive can be operated on very short centers, in this case the distance between centers being 45 inches.

2. We find chain drives for our conditions to be more satisfactory than the gears for the reason that there is a saving in space, absolutely no noise, and they have a tendency to take up the shock between the motor and main line of shafting when heavy loads are thrown on the mills or calenders; also, we find them very efficient and economical, and therefore do not hesitate to recommend them for rubber mill work and power transmission of that nature.

$204,000,000.00 GOES UP IN SMOKE.

Over a million times during the past ten years people here in the United States have witnessed the thrilling sight of burning buildings. In the year 1889 this cost the nation $123,046,833.00; ten years later the loss amounted to $153,597,830.00; while last year $204,000,000.00 worth of property was destroyed by fire. This constantly increasing annual fire loss in the United States has induced engineers interested in fire protection to seek with renewed zeal for all practical methods of lessening the danger of ignition and spread of flames. As a result of this, tile, vitrified facings, terra cotta, concrete construction and numerous other fire-resisting materials have been developed for use in all parts of buildings except the roof, while comparatively few important improvements have been made in roofing materials, notwithstanding the fact that authorities claim that from 27 to 50 per cent. of the conflagrations are the result of flames being communicated to adjoining buildings by burning sparks and embers falling on an inflammable roof.

Barns, etc., are probably more at the mercy of burning sparks and embers than other types of buildings, because they are usually covered with so-called ready roofings, and many roofings of this type are made of wool felt, rag stock, paper, coal tar and other highly inflammable materials. J-M Asbestos Roofing, which is being largely used on factories and large buildings, seems to be free from these objections. It is said to be so fire-proof that it will withstand the flame of a blow-torch for an hour without being injured. This roofing is made by the H. W. Johns-Manville Co., of New York, well known as manufacturers of asbestos products.

This roofing is made of asbestos (a stone) and Trinidad Lake Asphalt (a mineral).

The asbestos rock when it comes from the

mines is in appearance much the same as other rock, as will be noted from illustration. When scientifically crushed, this rock produces long, tough fibers which are woven into cloth for asbestos theater curtains, made into sheets of felt for roofing, and treated in various ways for making hundreds of different fireproofing materials.

They operate a good sized textile mill carding and spinning the asbestos fiber and weaving asbestos cloth.

In making this roofing, several sheets of this asbestos felt are thoroughly saturated with genuine Trinidad Lake Asphalt, a permanent waterproofing material. These sheets are then cemented firmly together with this asphalt, making one homogeneous mass. This, then, constitutes an actual covering of stone, which, because of its all-mineral nature, not only offers to a building protection against fire, water, wind and weather, but which also is claimed not to rot, rust, melt, run or crack, and requires no painting to preserve it. A booklet has been issued on this subject by the manufacturers.

GLAZED EARTHENWARE JIG ROLLS.

During the past year some of our largest and most progressive cotton cloth dyers have been trying out a porcelain jig roll, built in Radcliffe, Eng., by Samuel Walker & Sons, Ltd., under the Halstead patent. These new jig rolls are made of a uniform diameter of 8 1/4 in., in all standard lengths up to 72 in. on the face. The invention consists of a strong earthenware roll well glazed on the face and fitted with cast iron or brass heads, a mild steel center running right through. The builders claim that they are the easiest and quickest roll to clean on the market, they cannot crack and allow the dye to soak in and reappear to damage a lighter shade in a subsequent dyeing.

Very favorable comment is made by American and Canadian dyers fully corroborating the reports made by English, German and French users of these rolls. We are told by the selling agents, the Cell Drier Machine Company, 147 Milk St., Boston, Mass., that the cost is so modest that they can compete with rubber-covered or metal rolls.

"DURON."

This product, sold by the Amid Duron Co., 100 William St., New York, is used for making oil emulsions for woolen and worsted mills. The American agents state that in combination with olive or peanut oil "Duron" gives perfectly stable emulsions free from soap and alkali and of the highest value for the spinning of worsted and carded woolen yarns. In special combinations, white, odorless emulsions can be produced which do not change the shade in the manufacture of certain yarns. No soap, soda or alkali is used with Duron and consequently the emulsions are neutral and do not affect the iron and leather parts of the machinery. It is claimed that with the Duron emulsions less waste is made, less oil required and that the goods are more easily scoured. The Duron emulsions have been used in Continental mills and the American agents give a number of very strong recommendations of the product from European users. The Amid Duron Co. will give further information and supply trial lots to manufacturers.

REINFORCED CONCRETE AND MACHINERY MAINTENANCE COSTS.

The relation of maintenance outlay to the net profits from a business has in recent years played an important part in the calculations of mill architects. The engineer has paid more and more attention to operating questions, and this more comprehensive view of the effect of particular types of construction on repairs and depreciation has greatly influenced his functions as designer and constructor.

The use of reinforced concrete in the new Maverick Cotton Mill, at East Boston, Mass., illustrates the way in which the operating knowledge of the engineer influences his construction practice. The chief interest of the Maverick Mill is not the fact that it is probably the largest cotton mill built of reinforced concrete, but that concrete was adopted by the engineers, Lockwood, Greene & Co., of Boston, because their experience with the relation of types of construction to operating cost had convinced them that a reinforced concrete cotton mill was in the long run less expensive than the ordinary type of mill construction. Concrete costs more than wood, or wood and brick, even in the North where lumber is more costly than in the region of the Southern cotton mills. A concrete mill therefore costs more at the outset than one of wood, but the wooden mill sways and vibrates incessantly under the running of textile machinery, and this vibration of the whole building adds a good deal to the inevitable minimum of wear and tear on the machinery.

The cost of repairs to the machinery is one of the large items of expense of a textile mill. Hence the importance of lessening the cost, in time and money, of repairs to machinery. A reinforced concrete mill properly designed and constructed is monolithic, rigid, free from vibration. This rigidity means an important reduction in the cost of repairs to machinery. For some types of machines and in some industries, reinforced concrete would not be worth while solely on this point of its rigidity, but for the textile mill these engineers believe that rigidity means a sav-

ing which very soon overbalances the greater initial cost of concrete over ordinary mill construction.

From the standpoint of construction and operating considerations, the Maverick Mill is of special interest. The main mill, 550 ft. long by 130 ft. wide, has been built two stories in height, but the columns and wall members have been designed to carry two additional stories, which may be built some time in the future. The one-story weave shed, 340 by 231 ft., is novel in the construction of the saw-tooth roof, in which the horizontal tie-rods and tie-girders are absent. Each bay throughout its entire length is free from any obstruction to the light from the window. The 995 looms in this weave shed are driven by belts passing through slots in the concrete floor from motors in the basement. The room is an example of space and light used to very great advantage.

Having satisfied the operating requirements of rigid floors and framework, money was saved by building the outer walls of both mill and weave shed of hollow concrete tile. This tile is fire-proof, and it costs, labor of laying included, even less than brick. It is also better than brick because of the insulation provided by its contained air spaces.

In regard to the installation of machinery the difficulties which many mill men associate with the idea of concrete construction were easily overcome in the Maverick Mill. In the spinning mill the motors which drive the machinery are suspended from channel beam frames bolted to the girder beams of the floor above. Proper engineering foresight has provided in the various portions of the concrete structure the margin of strength, and the arrangement of reinforcement, necessary for the carrying of all the necessary motors. The attaching of the various machines to the concrete floors has involved no difficulties. A small power drill has bored holes in the concrete almost as quickly as they could be driven in wood, and an expansion bolt in each hole gives an excellent anchorage. In the case of the spinning frames, the friction of the frame on the concrete floor adds so much to the stability of the machines under the pull of the driving belts that six bolts give an adequate anchorage, while it is customary in fastening the frames to a wood floor to use twenty-two bolts.

The absence of vibration of the building as a whole also removes the tendency of the machines to shift or "walk" on the floor from this cause. These details are referred to only by way of pointing out the fact that the supposed mechanical difficulties attending concrete mill construction are very easily met, and constitute no serious problem.

SCIENCE IN ILLUMINATION.

BY FRANK B. RAE, JR.

The reflector is a machine. Its raw material is the light delivered to it by the lamp. Though it may seem strange to those of us who have been shading lamps with the first thing that came to hand, as much time is being spent by some reflector manufacturers in the design of correct reflectors as is being put on the making of the most complicated mill machinery. This time is not being spent without cause, for poor lighting conditions are a large factor in increasing the spoilage, and decreasing the production of any factory. For this reason the announcement of a new line of steel reflectors from the Holophane Company is of interest.

These new reflectors are placed on the market in two types. The extensive, which gives a broad distribution of light, and the intensive, which concentrates the light over a smaller area.

The reflectors are designed for use with the Mazda or tungsten filament lamp and are built for all sizes up to and including the 100 watt lamp. There has been some hesitance on the part of mills in installing tungsten filament lamps on account of their fragility. But as methods of manufacture have rapidly improved stronger filaments have been produced and large installations have proven that breakage of these lamps can be kept down to a negligible amount. It should, however, always be remembered that

when cleaning lamps and reflectors the lamps should be lighted, since the tungsten filament when heated becomes slightly pliable and therefore almost unbreakable.

In the lighting of looms the most usual method heretofore employed has been to place a 16 candle power lamp directly over the center of the aisle between the front of each pair of looms. This method is unsatisfactory. Its defects are briefly:

1. Lamps are hung low enough to be within reach of operator.

2. Lamps are usually bare or equipped

THE EXTENSIVE TYPE OF REFLECTOR.

with flat reflectors so that much of the light passes over and beyond the looms.

3. Instead of the light falling on the working surface, it shines directly in the eyes of the operators.

4. Annoying shadows of the operator's body are formed on the working surfaces.

The new Holophane Reflectors are designed to remedy these defects. Their advantages may be summed up under three headings.

First, they show an average increase of 31 per cent. in useful light over the previous type of steel reflector offered for industrial work. This increased efficiency is the result of two improvements; the carefully designed contour of the reflector and the use of a special quality of steel which permits of securing a more highly reflecting surface.

The second point to be emphasized is that the Holophane Reflector completely covers the lamp. Light above angles of 70° to 75° from the vertical line through the lamp is completely cut off. This will be seen to be a particularly valuable asset in industrial work because it allows the use of clear lamps with the maximum light, and does away with possibility of glare from direct light shining into the operator's eyes. Also, no light is allowed to stray over and beyond the looms, thereby losing its effectiveness.

The distribution given by the new Holophane Reflectors is more nearly the ideal for uniform illumination over the working surface and they may, therefore, be hung high enough to be out of reach of the operator

THE INTENSIVE TYPE OF REFLECTOR.

and this without loss of light. It also makes possible a placement of units which does away with annoying shadows.

The fact that these steel reflectors suppress the light at an angle considerably below the horizontal has occasioned some speculation as to the illumination of the ceiling and upper side walls. From actual installations it has been found that by reflection from the floors and working surfaces enough light is returned to the ceiling to make such work as replacing broken belts easily accomplished. There is just enough contrast between the walls and ceiling and the working surfaces to avoid the depressing effect of dark and gloomy surroundings on the one hand, and the wearisomeness of absolutely uniform lighting on the other.

Complete data and exact photometric curves of these reflectors can be secured from the Holophane Company, Newark, O. It might be added that the engineering department of this company is always available to textile mill men who feel that they want competent advice on their lighting problems.

Personals.

Owen Brophy, overseer of carding at the New England Cotton Yarn Co., New Bedford, Mass., has resigned to engage in real estate business.

Patrick Farrell, at one time overseer of the carding department at the Nemasket Mills, Taunton, Mass., but later engaged at Utica, N. Y., in a similar capacity, has been appointed overseer of carding at the Rotch Mill, New Bedford, Mass.

Albert A. Hyde, formerly superintendent of the Borden Felt Works, Millbury, Mass., has been appointed superintendent of the Franklin Felt Mills, Franklin, Mass.

John Martin, overseer of weaving at the Saranac Mills, American Woolen Co., Blackstone, Mass., has severed his connection with that company. He is succeeded by Chas. Cummings.

Joseph Costine has been appointed overseer of finishing at the Somerset Woolen Co., Monson, Mass. He was formerly employed at the Aetna Mills, Watertown, Mass.

Jere Emery, superintendent of the Beaver Dam Woolen Mill, Beaver Dam, Wis., has returned to his home in West Medway, Mass., the mill at Beaver Dam being closed indefinitely.

George A. Elliott has accepted the position as overseer of spinning at the Cheshire Mills, Harrisville, N. H., succeeding C. A. Sleeper.

Louis Cave, who has been overseer of dyeing at the Belding Silk Mills, Northampton, Mass., has resigned and has started a dye shop at his home on King St.

E. C. Gammage, treasurer and manager of the Premier Worsted Mills, Wickford, R. I., has severed his connection with that company. Wm. Titter has been appointed treasurer to succeed him.

George Cooper, overseer of weaving at the No. 1 mill of the Cocheco Dept., Pacific Co., Dover, N. H., has resigned after three years of service for this company. He has made no plans for the future.

Max Wagner, who has been employed as designer at the Fredericksburg Woolen Mill, Fredericksburg, Va., has accepted a similar position with the Melville Woolen Co., Chambersburg, Pa.

Joseph Gareau has accepted the position as overseer of the cloth department at the Danielson Cotton Co., Danielson, Conn.

George W. Dickson, for many years manager of the New York office of Arthur Merritt, has become associated with the Odsonia Mill, Jamestown, N. Y., which is a branch of the Cleveland Worsted Co., Cleveland, O.

Thomas Pennington, overseer of weaving at the Aldrich Mfg. Co., Moosup, Conn., has severed his connection with that company to accept a similar position with the Hamilton Mfg. Co., Lowell, Mass.

E. W. Cook has accepted the position as overseer of finishing at A. D. Ellis & Co., Monson, Mass. He was formerly employed at Stottville, N. Y.

F. J. Demers has accepted the position as overseer of dyeing at the Rochester Woolen Co., Rochester, N. H.

James Brooks has been appointed overseer of the finishing department at the Aspinook Bleachery, Jewett City, Conn., succeeding the late W. H. Bennett.

John Martin succeeds A. A. Dobbrow as overseer of weaving at the Reliance Worsted Co., Norwich, Conn. Mr. Martin formerly held this position.

Edward Elsner, designer at the Stanley Woolen Co., Uxbridge, Mass., for over two years, has resigned to accept a similar position with the Wyandotte Worsted Co., Waterville, Me.

Joseph B. McIntire, assistant superintendent of J. & P. Coats, Ltd., Pawtucket, R. I., has severed his connection with that company. He had been in their employ the last sixteen years.

Chas. E. Lord has been appointed president of the Aberfoyle, Galey & Lord Mfg. Companies, Chester, Pa., to succeed the late Wm. P. Galey.

Wm. C. Sainsbury, assistant designer at the National & Providence Worsted Mill, American Woolen Co., Providence, R. I., has severed his connection with that company.

Albert Rhodes has accepted the position as designer at the Pontoosuc Woolen Mfg. Co., Pittsfield, Mass. He comes from the Perseverance Worsted Co., Woonsocket, R. I.

P. F. Whalen, formerly designer at the Namquit Worsted Co., Bristol, R. I., has resigned. He is succeeded by L. C. Hollingsworth, recently of Providence, R. I.

H. Hollingwood of Plymouth, Mass., a graduate of the Lowell Textile School in 1909, who has been designer at the Peerless Woolen Mills, Rossville, Ga., has been promoted to the position of assistant superintendent.

W. P. Mooneyham has accepted a position as overseer of spinning at the Kinston Cotton Mills, Kinston, N. C. He comes from the Mecklenburg Mills, Charlotte, N. C.

J. J. Crosby, designer at the Apalache Mill, Arlington, S. C., has accepted the position as overseer of weaving, slashing and drawing-in in the new mill at Martinsville, Va.

W. D. McCoombs, overseer of spinning, winding and assistant superintendent of the Waverly Cotton Mills, Laurinburg, N. C., has accepted a position as overseer of spinning in the new Patterson Cotton Mill, Roanoke Rapids, N. C.

O. S. Pitts has accepted the position as overseer of carding at the Hamer Cotton Mills, Hamer, S. C., having resigned a similar position

on night work at the Scotland Cotton Mills, Lourinburg, N. C.

Arthur E. Benson, superintendent of the Colwell Worsted Mill, Providence, R. I., has resigned to accept a similar position with the Premier Worsted Mill, Wickford, R. I.

Wm. P. Nichols, superintendent of the Mohegan Mills, Wanskuck Co., Mohegan, R. I., has severed his connection with that company.

James C. Carmack has been appointed overseer of dyeing at the Dunn Worsted Mills, Woonsocket, R. I., succeeding W. F. Hines.

Robert Weichert, president and manager of the Woodside Woolen Mills Co., Northboro, Mass., has sent in his resignation to the directors of the concern, to take effect at an early date.

Z. V. Gray has been appointed overseer of spinning at the Manetta Mills, Lando, S. C. He comes from Chester, S. C.

Samuel Hartman has resigned his position as foreman at John Hollbach & Co., Paterson, N. J., to accept the position of superintendent and manager of the Lincoln Silk Co., Paterson.

J. P. Liddy, formerly superintendent of the Utica Knitting Mill No. 2, Utica, N. Y., has been made general superintendent of the company and A. E. Cantwell has been promoted to the position of superintendent.

G. W. Trask, formerly boss spinner at the Utica Fine Yarn Co., Utica, N. Y., has resigned to accept a similar position with the Sauquoit Spinning Co., of Capron, N. Y.

Wm. Coleman, Jr., superintendent of the Anchor Mills, American Woolen Co., Pascoag, R. I., and Miss Abbie May Brown of Providence, were united in marriage at the home of the bride's mother in Providence, Monday, October 10. After a wedding tour Mr. and Mrs. Coleman will take up their residence in Pascoag.

Henry Howard has accepted the position as overseer of carding at the Bibb Mfg. Co., Macon, Ga. He comes from Fall River, Mass.

Thomas Horrocks has been appointed superintendent of the Uncasville Mfg. Co., Versailles, Conn., succeeding H. Canavan.

Thomas F. Ashe has accepted a position as overseer of carding at the Wallace & Smith Blanket Mills, La Porte, Ind. He comes from Beaver Dam, Wis.

George Collins, overseer of dyeing at the Pitman Mfg. Co., Laconia, N. H., has severed his connection with that company, after a number of years of service.

R. R. McGraw, overseer of weaving at the Poulan Cotton Mill, Poulan, Ga., has resigned to accept a similar position at the Pelham Mfg. Co., Pelham, Ga.

E. L. Strickland has succeeded R. P. McCraw as overseer of weaving at the Poulan Cotton Mills, Poulan, Ga.

Chas. P. Hornbuckle has accepted the position as overseer of spinning at the Brower & Love Bros.' Mill at Indianapolis, Ind. He comes from Evansville, Ind.

Grant Estlow, superintendent of the Cedar Falls Mfg. Co., Cedar Falls, N. C., has resigned to become assistant superintendent of the Patterson Mills, Roanoke Rapids, N. C.

Asa Gray has resigned as overseer of weaving at the Mascott Mill, Bessemer City, N. C., to accept a position in the Turkish towel department of the Barker Mills, Mobile, Ala.

F. C. Graddick has accepted the superintendency of the Efird Mills, Nos. 1, 2 and 3, Albemarle, N. C., succeeding W. G. Reynolds, who resigned. Mr. Graddick has been superintendent of the three mills at Laurinburg, N. C.

D. G. Ellenberg has accepted the position as overseer of spinning at the Summerville Cotton Mill, Summerville, Ga.

Shuford Allred, from Granite Falls, N. C., has been appointed superintendent of the A. A. Shuford Mfg. Co., Hickory, N. C.

J. J. Smith, overseer of carding and spinning at the Hillsboro Cotton Mill, Hillsboro, Tex., has resigned on account of ill health.

J. W. Kirkland, formerly overseer of weaving at Bamberg, S. C., has accepted a similar position at the Hannah Pickett Mill, Rockingham, S. C.

Patrick H. Connelly has accepted the position as overseer of spinning nights at the Burlington Mills, Winooski, Vt. He comes from Gilbertville, Mass.

Angus Garrett, formerly superintendent of the Novelty Underwear Mills, Waterford, N. Y., has accepted a similar position with the Fuld & Hatch Knitting Co., Albany, N. Y.

Harvey Shantz has accepted the position as boss knitter at the Easton Knitting Mills, Easton, Pa. He comes from Reading, Pa.

W. T. Wilkinson has been appointed boss weaver and designer at the Aldrich Mfg. Co., Moosup, Conn. He was formerly employed at the Bristol Mfg. Co., New Bedford, Mass.

Joseph F. Thomas has accepted the position as overseer of spinning, warping, spooling, reeling and doubling at the Utica Fine Yarn Co., Utica, N. Y. He comes from Yorkville, N. Y.

Edward A. Donahue has accepted the position as overseer of spinning nights at the Victor Mills, Cohoes, N. Y.

Elvin Main, who has been second hand in the weaving department at the Cabot Mfg. Co., Brunswick, Me., has severed his connection with that concern to take a position as overseer of weaving and dressing at the Courtenay Mfg. Co., Newry, S. C. The position made vacant by his resignation has been filled by H. I. Cheney of Auburn, Me.

John T. McNaught has succeeded David A. Lapraik as overseer of dyeing at the Madison Woolen Co., Madison, Me.

Alex. Roberts has accepted the position as overseer of weaving at the Manetta Mills, Lando, S. C. He comes from Athens, Ga.

Wm. Riddles has been appointed assistant designer at the Pontoosuc Woolen Mfg. Co., Pittsfield, Mass., succeeding Clifford Costine.

Will Webster has accepted the position as overseer of weaving at the Tupelo Cotton Mills, Tupelo, Miss. He comes from the Meridian Cotton Mills, Meridian, Miss.

J. L. Riddle, overseer of spinning at the Edenton Cotton Mills, Edenton, N. C., has resigned to accept a similar position at the Victor Mills, Greer, S. C.

Paul Dry has returned to his old position as overseer of spinning at the Tuscarora Mills, Mt. Pleasant, N. C.

W. T. Phillips has been promoted to the position as overseer of weaving at the Clinton Cotton Mills, Clinton, S. C., succeeding W. D. Ingle, who will have charge of the weaving at the Richland Cotton Mill, Columbia, S. C.

T. B. Howard, Formerly overseer of carding and spinning at the Mobile Cotton Mills, Mobile, Ala., has taken charge of the spinning and spooling at the Girard Cotton Mills, Girard, Ala.

W. S. Dunson, superintendent of the Dixie Mills, La Grange, Ga., has severed his connection with that company.

C. G. Voss has accepted a position as oveerseer of carding at the Alice Mills, Easley, S. C. He comes from Tuxedo, N. C.

Frank H. Congdon has been appointed overseer of spinning at the Brookford Mills, Hickory, N. C. He comes from Clinton, S. C.

D. A. Kelly has accepted a position as overseer of carding and spinning at the Mecklenburg Mill, Charlotte, N. C., succeeding Mr. Hamilton. He was formerly employed at the Wampum Mill, Lincolnton, N. C.

Owen McEnany, for twelve years in charge of the singeing department at the Clyde Print Works, has severed his connection with that company to accept a much more responsible position with the Interlaken Dye Works of Arkwright, R. I.

Fred Taylor, who in 1904 won the manufacturers' medal at the New Bedford Textile School for proficiency in various branches, has been appointed assistant instructor of carding and spinning at the Clemson Agricultural College, Clemson College, S. C.

T. E. Minhinnette, treasurer and manager of the Gem Knitting Mills, Barnesville, Ga., has resigned. Floyd Murphy has been appointed treasurer and manager of this mill and F. J. Minhinnette, secretary.

Wm. E. Chamberlin has accepted the position as overseer of finishing at the Montrose Woolen Co., Woonsocket, R. I., succeeding Martin O'Toole.

J. W. Murphy, overseer of the cloth department at the Greylock Mill, North Adams, Mass., has resigned and is succeeded by W. C. Copland.

Frank L. Metcalf, foreman of a department at the Draper Co., Hopedale, Mass., and employed by this company for 25 years, has concluded his services with that firm. He was presented with a gold watch by the employes in the department where he was in charge.

Roland Holt, overseer of carding at the Eagle Mills, Eagleville, Conn., has severed his connection with that company to accept a similar position in one of the Southern States.

Geo. Fish, superintendent of the Richmond Mills, Richmond, Me., has been appointed superintendent of the New York Mills, New York Mills, N. Y. Mr. Fish accepted the position at Richmond March 4, 1907, having left a position as superintendent of the Massachusetts Mill, Lowell, Mass.

A. H. Sloan has resigned as overseer of carding at the Roxboro Cotton Mills, Roxboro, N. C., to accept a similar position at the Longhurst Mills, of the same place.

J. C. Gambrell, who has been superintendent of the Bibb Mills, No. 2, Macon, Ga., for over three years, has succeeded D. D. Flowers as superintendent at Porterdale, Ga.

Alex. Roberts, from Athens, Ga., has succeeded W. E. Stafford as overseer of weaving at the Manetta Mills, Lando, S. C.

W. M. Cameron, from Danville, Va., has accepted the position as boss dyer at the Altamahaw Cotton Mills, Altamahaw, N. C.

W. E. Stafford, who has been for several years overseer of weaving and finishing at the Manetta Mills, Lando, S. C., has succeeded J. A. Adams as superintendent of the Arcade Mills, Rock Hill, S. C.

John McIlver, formerly assistant superintendent of Erwin Mill No. 1 at West Durham, N. C., it is reported, will be the superintendent of the new No. 4 Mill at the same place.

John Adams has resigned as overseer of spooling, warping and twisting at the Eureka Mills, Chester, S. C., on account of poor health.

J. H. Hearne has accepted a position as overseer of weaving, slashing and drawing-in with the Pomona Mills, Greensboro, N. C. He formerly held the position as assistant overseer of weaving at the Woodside Mills, Greenville, S. C.

H. C. Moore, assistant superintendent of the Dickson Mills, Laurinburg, N. C., has resigned to accept a similar position together with that of overseer of spinning with the Waverly Mills of the same place.

Alex. Fairley, who has been for some time connected with the Bellevue Mills of Moorhead, Miss., and Burlington, N. C., has accepted the superintendency of the Scotland and Waverly Mills at Laurinburg, N. C.

Ben Scarboro has accepted a position as overseer of weaving at Lexington, N. C. He comes from the Louise Mill, Charlotte, N. C.

P. H. Tobin has accepted the position as overseer of finishing at the Earnsdale Worsted Mills, Clinton, Mass., succeeding Geo. Bliss.

John R. Scott celebrated his eighty-second birthday anniversary October 16 at his home on Mendon St., Uxbridge, Mass. Mr. Scott is remarkably active for a man of his age, and until two years ago was connected with the firm of John R. and C. W. Scott, which was later taken over by the Uxbridge Worsted Co.

Robert Love, for ten years master mechanic at the Warren Cotton Mills, has accepted a similar position at Baltic, Conn.

Wm. Bowers, who has been employed at the Roch Mills, New England Cotton Yarn Co., New Bedford, Mass., has accepted a responsible position with the Maverick Mfg. Co., East Boston, Mass.

J. K. Mitchell of Boston, Mass., has been elected president of the Jackson Cotton Mfg. Co., Anderson, S. C., succeeding D. P. McBrayer.

Howard Pember, for the past 27 years connected with the White Rock Mills, B. B. & R. Knight Co., White Rock, R. I., has resigned his position. He has been superintendent of this mill for a number of years.

Arthur G. Walsh, for 16 years employed as overseer of the cloth department at the Acushnet Mills, New Bedford, Mass., has severed his connection with that firm.

Chas. Manock is to succeed Geo. Fish as superintendent of the Richmond Mills, Richmond, Me. He was formerly employed at the Bullock Thread & Twine Co., Plympton, Mass.

Andrew Clapper has been appointed boss spinner at the Mechanicsville Knitting Co., Mechanicsville, N. Y.

Fred Hayes, overseer of the mule spinning department at the Nashewana Mills, New Bedford, Mass., has been appointed superintendent of that company.

James W. Ashworth has been appointed designer at the West Boylston Mfg. Co., Easthampton, Mass. He comes from New Bedford, Mass.

Asa J. Harwood, superintendent of the Lewis Knitting Co., Janesville, Wis., has severed his connection with that company to accept a similar position with the Richmond Knitting Mills, Richmond, Ind. He was presented with a handsome diamond stick pin by the help at the Lewis Knitting Co. as a token of high regard in which he was held. J. T. Dennett, night watchman, made the presentation speech. Mr. Harwood was taken completely by surprise but managed to thank them in a few words.

Edward H. Costello has resigned his position as overseer of spinning nights with the Somerset Woolen Co., Monson, Mass.

James Sheppard, Jr., has accepted the position as superintendent of the Rhode Island Worsted Co., Stafford Springs, Conn., to succeed the late J. Harvey Merrill. Mr. Sheppard has been connected with the Burlington Mills, Winooski, Vt., for several years.

Peter McMellen, overseer of dyeing at the Verd Mont Mills, Ludlow, Vt., has severed his connection with that company.

J. E. Mercure, overseer of the cloth department at the Manchaug Co., Manchaug, Mass., has resigned to accept a similar position with the Edwards Mfg. Co., Augusta, Me.

Fred M. Frary has accepted the position as overseer of ring spinning at the Edwards Mfg. Co., Augusta, Me. He was recently employed at the Rotary Ring Spinning Co., Boston, Mass., and previous to that time he was overseer of ring spinning at the Manchaug Mils, Manchaug, Mass.

Jos. T. Glenno has resigned his position as superintendent of the New Bedford Spinning Co. to accept a similar position with the Quissett Mill, same city. He is succeeded at the New Bedford Spinning Co. by James McNulty.

Charles Heathcote has been appointed superintendent of the Fall River Iron Works Co., M. C. D. Borden's mill, to succeed Samuel Hathaway.

J. L. Jackson has accepted a position as superintendent at the Paton Mfg. Co., Sherbrooke, Que., Canada. He was formerly employed at East Glastonbury, Conn., and succeeds Victor Thewlis.

P. J. Cook has accepted the position as overseer of carding at the Harmony Mill, Cohoes, N. Y. He was formerly employed at the Dana Warp Mill, Westbrook, Me.

James Good, designer at the Pioneer Woolen Mills, Robert Dobson Co., Pittsfield, Me., has resigned. He was presented with a handsome Masonic watch charm by the help in the designing room. Mr. Good is to accept a similar position with the Hall Bros. of Norwich, Conn. He is succeeded at the Pioneer Mills by Jere Emery, formerly with the Beaver Dam Woolen Mills, Beaver Dam, Wis.

Albert Dickinson succeeds Frederick L. Hayes as overseer of the mule spinning department at the Nashawena Mill, New Bedford, Mass. He was formerly employed at the No. 2 Bennett Mill, same city.

E. Worth has been appointed superintendent of the worsted yarn department for Penman's Ltd., Paris, Ont., Canada. J. W. Worth is acting as assistant superintendent, Geo. V. Knill, overseer of drawing and spinning, and W. Whaley, overseer of twisting and reeling.

Henry A. Waterhouse, superintendent of A. L. Sayles & Sons, Granite Mills, Pascoag, R. I., has severed his connection with that company.

George Eastwood, designer at the Akela Mill, A. H. & F. L. Sayles, owners, Pascoag, R. I., has accepted a similar position with the new Tinkham Mill at Harrisville, R. I.

Frank Sawtell, of New Bedford, Mass., has accepted the position as overseer of spinning for B. B. & R. Knight's mill at Pontiac, R. I.

N. B. Kerr has been appointed agent and treasurer of the Eclipse and Beaver Mills, No. Adams, Mass. He is also treasurer of the Butler Mills, New Bedford, Mass.

H. S. Duckworth, superintendent of the Hamilton Mfg. Co., Lowell, Mass., has severed his connection with that company to accept a similar position with Garner & Co., Pleasant Valley, N. Y.

Louis A. Kerr was appointed superintendent of the Butler Mills, New Bedford, Mass., at a meeting of the directors held recently. He is a son of N. B. Kerr, treasurer of the company.

James A. Higgins has severed his connection with the Geo. H. Gilbert Mfg. Co., Gilbertville, Mass., to accept a position as overseer of spinning at the Burlington Mills, Winooski, Vt.

Frank Manley has been appointed superintendent of the Stillwater Worsted Co., Greenville, R. I., succeeding John F. Dunn.

H. E. Gile is assistant superintendent of the Springvale Spinning Co., Springvale, Me.

Fred Edgton has accepted the position as overseer of weaving at the Garland Woolen Co., Staffordville, Conn.

Thomas Killion, overseer of weaving at the Garland Woolen Co., Staffordville, Conn., has resigned to accept a similar position with the Danielson Worsted Co., Danielson, Conn.

W. C. Damon, who has been superintendent of the Rhode Island Worsted Co., Stafford Springs, Conn., since the death of J. Harvey Merrill, is to succeed H. A. Waterhouse as superintendent of the Granite Mills, A. L. Sayles & Sons, Pascoag, R. I.

C. W. Aldrich has accepted the position as overseer of weaving at the Gregory Mills, Clifton, N. J.

Winfred Beech has accepted the position as second hand in the carding and combing department at the J. R. Montgomery Co., Windsor Locks, Conn. He comes from Montreal, Canada.

F. B. Buck, treasurer and general manager of the H. L. Welch Hosiery Co., Waterville, Conn., died at his home in Waterville, October 26. His health has not been very good for some time but his death was not looked for. Mr. Buck was highly esteemed by the employes and the town will lose one of its best citizens.

F. L. Putney, late superintendent of the Bound Brook Woolen Co., Bound Brook, N. J., has been appointed superintendent of the Collins & Aikman Co., Manayunk, Philadelphia, Pa.

Geo. Moore has acepted a position as overseer of spinning for J. Broadbent & Son, Unionville, Conn. He was formerly employed at the Great Falls Woolen Co., Somersworth, N. H.

Geo. Spencer has been appointed designer at the Textile Mfg. Co., Wales, Mass. He was formerly employed at the Atlantic Mills, Providence, R. I.

Napoleon Raymond, overseer of carding at the Lippett Mill, Phoenix, R. I., has severed his connection with that company.

Geo. P. Colby has accepted the position as overseer of spinning at the Barker Mills, Auburn, Me. He was formerly employed at Montreal, Canada.

A. F. Griffin, manager of the Wuskanut Mill, Farnumsville, Mass., has been appointed manager of the Hoosick Worsted Mill Co., North Adams, Mass.

Harry H. Daw, superintendent of the Wuskanut Mills, Farnumsville, Mass., has been appointed manager to succeed A. F. Griffin, who has resigned. Mr. Daw started at this mill first as a designer and was in a short time made superintendent and his promotion to the position of manager shows that his ability has been appreciated by the company.

Carl A. Norberg, overseer of weaving at the Locustville Woolen Co., Hope Valley, R. I., has severed his connection with that company. He is succeeded by Arthur W .Corey.

R. D. Provost has accepted the position as overseer of knitting for John Wiley of Brooklyn, N. Y.

John P. Fortney has accepted the position as overseer of weaving at the Miller River Mfg. Co., Athol, Mass. He comes from Putnam, Conn.

Henry A. Allard has been appointed designer at the Aetna Mills, Watertown, Mass. He was formerly employed at the French River Textile Co., Mechanicsville, Conn.

Wm. Denico has accepted the position as overseer of spinning at the Locustville Woolen Co., Hope Valley, R. I. He was formerly employed at the Rivulet Mill, Uxbridge, Mass.

Alfred Goodwin has accepted the position as assistant superintendent at the Flaxen Fibre Down Co., Lockport, N. Y. His last position was with the Orr Felt & Blanket Co., Piqua, O.

Fred McEvoy has accepted a position as second hand in the dye house at the Arden Mill, American Woolen Co., Fitchburg, Mass.

F. L. Morginson has been appointed superintendent and designer at the California Woolen Mills Co., California, Mo. He was formerly employed at the Marston Worsted Co., Skowhegan, Me.

James Morrow has accepted the position as overseer of finishing at the Farwell Bleachery, Lawrence, Mass. He was formerly employed at Norwich, Conn.

L. A. Holt has accepted the position as shipping clerk at the Ballou Yarn Co., Providence, R. I. He was formerly employed at the Geneva Mill, Providence.

E. C. Gammage has been appointed designer at the Marston Worsted Co., Skowhegan, Me. He was formerly employed at Wickford, R. I.

DEATHS.

Witten McDonald, president and buyer of the Kansas City Cotton Mills Co., Kansas City, Mo., and at one time publisher of the Kansas City Times, died suddenly at his home, 217 West Armour Blvd., Kansas City, September 30. The cause of Mr. McDonald's death is not known as he was apparently in good health and attended to his regular duties during the day, retiring at the usual hour that evening. He was born in Wyoming County, West Virginia, June 4, 1846, and is survived by three daughters and three sons.

Walter F. Scott, at one time connected with the woolen mill known as F. Scott & Son of Saugus, Mass., and who operated this mill after the death of his father until a few years ago, was accidentally shot October 5 by a New York banker with whom he was hunting at Pittsburg, N. H. Mr. Scott's body arrived in Saugus the following day for interment. Mr. Scott had been interested in the automobile business for the past few years in partnership with Charles R. Greuter. He was considered very wealthy and prominent in Saugus.

J. Harvey Merrill, manager of the Rhode Island Worsted Co., Stafford Springs, Conn., and formerly general manager of the Namquit Worsted Co., Bristol, R. I., died at his home on Wellington Ave., in that city, Friday morning, September 30, after a brief illness of appendicitus. Mr. Merrill was 41 years of age and is survived by a wife and two children.

George E. Peberdy of the firm of Geo. Peberdy's Sons, Wingohocking Hosiery Mills, Penn St., Germantown, Pa., died at his home, 360 Church Lane, Germantown. He is survived by a widow and one daughter.

Chas. N. Howard, a member of the firm of the Howard Braiding Co., East Providence, R. I., manufacturers of braids and shoe laces, died suddenly of heart failure on Sept. 26 at the age of 67 years.

Henry M. Harley, president and manager of the Fries-Harley Co., manufacturers of carpets and rugs at Gloucester City, N. J., and a leading Democrat of Camden County, died at his home in that city at the age of 67 years. He recently returned from Mexico, where he had taken a trip for his health. In addition to being president and manager of the mill, during the past thirty years he was a director of the Camden County Board of Free Holders, a member of the Gloucester Board of Education; City Council, of which body he was president three years; chief of the Gloucester Fire Department and a director of the Broadway Trust Co.

Wm. H. Sheridan, for a number of years superintendent of the D. M. Collins & Co. Knitting Mills of Pittsfield, Mass., died at his home on Maplewood Ave., after an illness covering a period of several months. He was 43 years of age and is survived by his mother, one brother and two sisters. Mr. Sheridan underwent an operation a year ago but was forced to give up his position in January of this year and was confined to his home as an invalid. He was a man who had a large circle of acquaintances and friends.

Col. Seth M. Richards of the firm of Dexter, Richards & Sons, manufacturers of woolen goods at Newport, N. H., and a director of the Connecticut R. R., died at his home in Newport, September 26. He was born in that town, June 6, 1850. Following the death of his father in 1898 he was elected treasurer of the First National Bank, which position he held until the time of his death. He was also a trustee in the Newport Savings Bank, president of the Newport Lighting Co., and president of the Newport Improvement Co. He was also a member and formerly president of the board of trustees of the Richards Free Library and one or the largest stockholders of the Brampton Woolen Co.

John L. Burlingame, treasurer and agent of the Holyoke Warp Co., Holyoke, Mass., died at his home in that city after a lingering illness. He leaves a widow, one son and a daughter.

H. Clay Marchant, president of the Charlottesville Woolen Mills, Charlottesville, Va., died suddenly in Cincinnati, O., where he had been as a delegate to the general convention of the Episcopal Church. In 1868 he founded the Charlottesville Woolen Mills and was over forty years superintendent and general manager.

Henry A. Stearns, vice-president and superintendent of the Union Wadding Co. of Central Falls, R. I., died at his home in Central Falls on Oct. 11th at the advanced age of 85 years. He had been connected with the Union Wadding Co. since its beginning in 1861. When the company was incorporated in 1871 he was made vice-president and superintendent and held the position up to the time of his death. Mr. Stearns was a native of Billerica, Mass., and received his early education at Philips-Andover Academy. Soon after engaging in business he moved to Cincinnati and there established the first cotton wadding factory in the western part of the country. The business was later on incorporated and still exists under the name of the Stearns & Foster Co. In 1850 Mr. Stearns sold his interest in that business and went to the Pacific Coast, where he remained for several years, afterward locating in Buffalo. The panic of 1857 was a hard blow to him as to many others and he lost almost everything in that crisis. It was in 1861 that Mr. Stearns went to Rhode Island and locating in Pawtucket joined with Darius Goff in the wadding business. The Union Wadding Co. was the result of this partnership. Mr. Stearns always took an active interest in public affairs. From 1878 to 1881 he served as representative in the General Assembly and from 1881 to 1884 represented the town of Lincoln in the State Senate. In 1891 he was elected Lieutenant Governor of the state, serving in that capacity for two terms. Mr. Stearns was a thirty-second degree Mason and a Knight Templar.

Frederick Place, for 22 years overseer of spinning for W. E. Hayward & Co., East Douglas, Mass., died in that town at the age of 55 years.

Mill News

Those interested in receiving early and more complete investigated information of projected new mills, enlargements, improvements, fires, facts and gossip of the trade are referred to the TEXTILE ADVANCE NEWS, issued weekly by the publishers of the TEXTILE WORLD RECORD, at $15.00 per year.

COTTON.

New Mills.

Georgia, La Grange. A new mill is to be built in La Grange, but the details have not been determined. Tentative plans are being drawn and application has been made for a charter with capital stock of $250,000. The company will be known as the Dunson Mills and J. E. Dunson will be president and W. S. Dunson, treasurer and superintendent of the Dixie Cotton Mills of this place, will fill the same position in the new company. J. M. Bernard also is interested.

*Georgia, Monticello. It is reported the Jasper Cotton Mills have awarded contract for machinery eequipment. This is a 10,000-spindle project.

*Massachusetts, Fall River. The cotton shed of the new Charlton Mills has been finished. Rapid progress is being made toward the completion of the buildings.

*Massachusetts, New Bedford. Plans for buildings for the Booth Mfg. Co. call for a main structure, 3 stories high, 518 by 132 ft.; weave shed, 1 story high, of saw-tooth roof construction, 450 by 201 ft.; and power house, 50 by 150 ft., which will contain two reciprocating engines of 850 h. p. each, one to be connected with rope drive and the other a direct connected electrical unit. Contract for construction work has been awarded to the J. W. Bishop Construction Co., at a cost of $400,000. Practically all the stock offered the public has been subscribed.

North Carolina, Charlotte. O. A. Robbins of Charlotte, a mill engineer and architect, is interested in a new cotton mill project, the plan being to organize a company with capital stock of $400,000 and establish a 20,000-spindle fine goods mill in the Piedmont section. The location has not been determined, although Greenville, S. C., will be considered. Mr. Robbins states that plans have not sufficiently matured to allow of definite information being given.

*North Carolina, Winston-Salem. Buildings for the Inverness Mills Co. are completed and the installation of machinery has been started. It is expected the plant will be entirely completed and ready for operation by December 1.

Pennsylvania, Philadelphia. Charles Rothwell has started up in the Turkish towel business with three looms at Umbria St. and the P. R. R., Manayunk. The production is sold direct.

*South Carolina, Columbia. The Glencoe Cotton Mills will begin manufacturing in a few days. The mill has just been completed and the work of installing 5,000 spindles for spinning cotton twines and warps is being completed. T. H. Wannamaker, formerly of the Orange Cotton Mills at Orangeburg, S. C., is president; G. M. Berry, cashier of the National Loan & Exchange Bank of Columbia, vice-president, and T. H. Wannamaker, Jr., secretary and treasurer.

*South Carolina, Great Falls. Good progress is reported on the first unit of the Republic Cotton Mills and it is probable this section will be in operation by the first of the year.

*South Carolina, Newberry. Contracts for the erection of buildings for the Oakland Cotton Mills will be awarded at an early date. The Southern Power Co. will supply electric power from the Newberry transmission lines of the company.

South Carolina, Union. A cotton mill is being organized with capital stock of $50,000 to manufacture a special line of cloth. D. C. Flynn, one of Union County's oldest merchants, is one of the promoters and is quoted as saying that there will be no difficulty in raising the capital.

*Vermont, Brattleboro. The necessary $120,000 has been secured and the Fort Dummer Mills Co. will shortly begin construction work on the proposed plant if a few minor conditions are complied with, such as the exemption from taxation for as long a period as the statutes of Vermont will permit and the building of tenement houses for operatives. Sites for the mill and tenement houses have been secured and surveyors are already at work. The plant will consist of a 3-story spinning mill, 250 by 75 ft., and a 2-story weaving mill, 200 by 95 ft.

*Virginia, Alta Vista. A. K. Loftin & Sons of Lincolnton, N. C., are preparing to erect new buildings and tenant houses for the Alta Vista Cotton Mill Co. Organization of this company has been noted previously. A. C. Hutchinson of Charlotte, N. C., is president and treasurer of the company.

Enlargements and Improvements.

Canada, New Brunswick, Milltown. An electric power plant of 400 h. p. will be installed in the St. Croix Cotton Mill to provide power for the dyeing department and for lighting purposes.

Connecticut, Danielson. Last February the Danielson Cotton Co. installed four new looms to manufacture blankets on an experimental basis, the plan being to add more of these looms if the manufacture of the new line was successful. At the present time new broad blanket looms are being located on the lower floor of the new addi-

tion, recently constructed, to be used in the weaving of these goods.

Connecticut, Jewett City. The Ashland Cotton Co. has installed a new 450 h. p. water wheel and other machinery and has resumed manufacturing.

Georgia, Columbus. The Eagle & Phenix Mills are expending about $25,000 in repairing the Lowell warehouse which they recently added to their plant and erecting a 100,000-gallon water tank to give added fire protection. A water wheel is being installed in No. 3 Mill to replace the one recently broken.

Georgia, Conyers. A new office building has been completed for the Milstead Mfg. Co. and a new water wheel has been installed.

Georgia, Griffin. Contract has been made by the Spalding Cotton Mills with the Central Georgia Power Co. for electric power to operate the plant. The Power Company has nearly completed the distributing station in this city.

Georgia, Monroe. The Walton Cotton Mill Co. has resumed manufacturing after a shutdown of several weeks for repairs and a general overhauling of machinery and buildings.

Massachusetts, Ware. A new turbine engine has been installed in the cotton cloth department of the Otis Co.

*New Hampshire, Dover. About half the work has been completed on the new cotton storehouse of the Cocheco Dept. of the Pacific Mills.

New Hampshire, Newmarket. The work of installing new cards in the Newmarket Mfg. Co.'s plant is nearly completed, 100 of the 125 being in place. The installation of new humidifiers has been completed and work is now in progress on installing a small amount of additional equipment in the mule spinning department.

New Hampshire, Somersworth. No. 1 Mill of the Great Falls Mfg. Co., the only building of this plant which is not modern, will be rebuilt. Preparations are being made to put in part of the foundation for the section to be added. It will not be necessary to tear down the old building for some time and it is probable that actual building operations will not be started until next spring.

*New Jersey, Florence. The addition being erected to the plant of the Florence Thread Co is 50 ft. wide, 70 ft. long, 4 stories high, and will enable them to increase their output about one-third when all the new machinery is in place. The building will be of standard mill construction and they expect to occupy it by October 15. The Florence Thread Co. has operated its plant to full capacity during the last two years and this enlargement is necessary to take proper care of gradually increasing trade.

New York, Oswego. A 4-story addition 100 by 40 ft. is to be built by the Standard Spinning Co. to be used as a storehouse. This is a branch of the Frisbie & Stansfield Knitting Co. of Utica.

North Carolina, Gastonia. Combers are to be installed by the Clara Mfg. Co. at an early date. This company operates 6,200 ring and 3,300 twisting spindles on 2/40s yarns.

*North Carolina, Lenoir. Subscriptions have been received for all the new stock of the Moore Cotton Mills Co. and arrangements made for new spinning equipment.

North Carolina, Mt. Holly. The Mt. Holly Cotton Mills Co. has completed the installation of electric power equipment and the entire plant will in the future be driven by electric power. 2/20s warps are manufactured on 3,000 ring spindles. A. P. Rhyne is president; H. A. Rhyne, secretary and treasurer, and I. B. Covington, superintendent.

*North Carolina, Salisbury. Details of the enlargement to be made to the Vance Cotton Mills have not been completed. The company at present is considering rough plans which have been prepared. Some time ago the capital stock was increased from $100,000 to $300,000 to provide funds for this enlargement and it was reported a 10,000-spindle mill for making fine combed yarns would be built.

Rhode Island, Providence. Eighty-four new 40-inch looms are being installed in the Grant Mills of the Hebron Mfg. Co., replacing 32-inch looms. Chas. E. Haynes is superintendent of the plant. When the changes are completed, there will be 294 looms, all with 40-inch reed space.

South Carolina, Anderson. It is understood that a weaving department will be added by the Riverside Mfg. Co. 20s to 30s single and 2 ply yarns are the products at the present time.

*South Carolina, Gaffney. The addition to the plant of the Hamrick Mills is expected to be ready for manufacturing about the middle of November. The new building is 2 stories high, and as noted previously, will contain 15,540 spindles and 364 looms. This equipment is now being installed. This improvement will cost in the neighborhood of $250,000.

*South Carolina, Greenville. The capital of the F. W. Poe Mfg. Co. has been increased to $1,000,000. Some time ago it was reported that the capital would probably be increased to build a new mill and it is probable that work will soon be started on this addition owing to the favorable action of the stockholders. The proposed addition will give total equipment of 70,000 spindles and 1,700 looms. Some smaller additions are under construction at the present time, including a waste house and a cotton opening room.

South Carolina, Lexington. The Lexington Mfg. Co.'s plant, which has been closed since the middle of June, is running on full time. During the period when the plant was closed a dyeing plant was added.

*South Carolina, Liberty. A further increase has been made in the capital stock of the Calumet Mfg. Co. from $150,000 to $500,000 and the name has been changed to the Maplecroft Mills. The new 2-story weave shed, 80 by 104 ft., has been completed and is ready for the installation of 200 automatic looms and cloth room machinery which have been bought. The previous increase in the

capital stock provided funds for the equipment of this weaving department and it is probable the further increase is to provide for future development of the plant. G. Lang Anderson is president, treasurer and buyer.

*South Carolina, Rock Hill. Following the increase in the capital stock of the Arcade Cotton Mills from $200,000 to $360,000, contract has been awarded for 6,200 spindles with accompanying machinery. The present equipment is 12,300 ring spindles and 315 looms operated by electric power on print cloths and 30s hosiery yarns. R. T. Fewell is treasurer and buyer, and J. E. Adams is superintendent. No further construction will be required for the increase in the machinery equipment, there being planty of space in the present building.

*South Carolina, Wellford. The addition to the plant of the Wellford Mfg. Co. will be completed within two weeks and will be equipped with carding and spinning machinery to supply yarn to the weaving department. The Jordan Mfg. Co., which was succeeded by the Wellford Mfg. Co., bought all the yarns used.

Mills Starting Up.

Alabama, Selma. Within a short time manufacturing will be started by the Valley Creek Mills, formerly the Estelle Cotton Mills. The new owners have overhauled the plant since purchasing it last March and plan to end the shutdown, which has lasted about two years, at the earliest possible date. L. E. Jeffries is president, and Wm. R. Meadows, formerly director of the Mississippi Textile School, is treasurer, manager and buyer. Convertible goods are to be manufactured on 10,800 ring spindles, 144 wide and 176 narrow looms.

*Georgia, Dublin. On October 1 the Georgia Cotton Mills will begin manufacturing. A force of men is now at work getting the buildings in readiness and cleaning up preparatory to ending a shutdown of many months. This plant was originally known as the Dublin Cotton Mills, but was purchased by C. J. Cooper of Atlanta for $82,000 in January, 1909. Mr. Cooper is president and treasurer of the company and J. F. Pennington is manager, superintendent of manufacturing and attends to the buying. The capital stock is $200,000. The plant contains 8,112 ring spindles and 260 looms, which will be operated on 4-yard sheetings, 48 by 48, 36 inches wide.

Kentucky, Covington. The Argonaut Cotton Mill Co. has resumed manufacturing. Operations were suspended several months ago.

New York, Capron. About December 1 the Sauquoit Spinning Co. will begin operations with 12,000 spindles on carded and combed hosiery yarns. This equipment is later to be increased to 20,000 spindles. W. H. Merriman, formerly of the Standard Spinning Co. of Oswego, is superintendent of manufacturing. As noted previously, this company purchased the plant of the Utica Cotton Co.

*North Carolina, King's Mountain. The Sevier Cotton Mills Co., formerly the John Mfg. Co., will be operated as a separate company and not by Lawrence S. Holt & Sons. Manufacturing will be started as soon as possible. The equipment is 5,000 spindles to be operated on single and ply yarns, 8s to 16s. $60,000 has been paid in and organization has been effected as follows: Lawrence S. Holt, pres.; Wm. E. Holt, vice-pres.; Robt. L. Tate, treas. and buyer. These men with Eugene Holt and Lawrence S. Holt, Jr., form the board of directors.

*Texas, Belton. The officers of the Belton Cotton Mill hope to have the mill in operation in thirty days and state this can be done if the local bondholders will renew the bonds which fall due January 1. Geo. W. Cole, the new secretary and treasurer, will have the active management of the mill.

Virginia, Roanoke. There has been some delay in starting up the plant of the Twine Mills Corp., formerly the Roanoke Mills, but it is expected operations will finally begin in a few days. A number of operatives have been attracted by reports that the plant would be started up and are ready to go to work. T. J. McNeely, superintendent and buyer for the old Roanoke Mills Mfg. Co., will act as superintendent of manufacturing. T. T. Fishburn is president and W. C. Ruffin is president and buyer.

Mills Shutting Down.

Massachusetts, Fiskdale. Owing to the unsatisfactory condition of the market for their goods, the Fiskdale Mills will shut down indefinitely. Stock in process is now being run out of the machinery.

New York, Newburgh. The Newburgh Steam Mills have closed indefinitely. The mills have been offered for sale for some time and two attempts have been made to organize companies to operate them. The property is owned by Garner & Co., who have disposed of their other plants. Manufacturing will not be resumed until the property is sold.

WOOLEN.

New Mills.

*Canada, Ontario, Windsor. A charter has been granted the Burlington-Windsor Blanket Co. with capital stock of $50,000. The directors are G. C. Rasch and W. G. Rasch of Burlington, Wis.; J. J. Horan and Lawrence Horan of St. Louis, and Porter Martin of Springfield, Mo. The company has secured a mill and will manufacture at first only a patent article known as "Ventiplex" fabric sweat pad which is now made by the Burlington Blanket Co. of Burlington, Wis., of which G. C. Rasch and W. G. Rasch are president and treasurer respectively.

Massachusetts, Winchendon. The Union Shoddy Mills, recently incorporated with capital stock of $10,000, has bought the plant in Bullardville formerly occupied by Brown & Sons, pail and tub manufacturers. The buildings are in need of repairs on account of the long time they have been idle and after this work is completed the

shoddy plant in Quixapoxet controlled by this company will be moved to Winchendon and a large amount of new machinery installed. It is expected the buildings will be repaired in two months when the Quinapoxet plant will be transferred to Winchendon. Soloman Gould, 11 Queen St., Worcester, is treasurer of the Union Shoddy Mills.

Massachusetts, Worcester. The Rome-Feigenson Co. has been incorporated for the purpose of manufacturing woolen goods. Hyman J. Rome of Gardner is treasurer. Although no definite location has been decided upon, the new company will locate in Worcester county and will manufacture heavy woolen goods at first. Later it is planned to make dress goods.

*Rhode Island, Harrisville. As suggested in the report of the incorporation of the Wolff Worsted Mills, the new company will occupy the factory building built by Ernest W. Tinkham and will operate the machinery recently sold by the Glen Worsted Co., increasing this, however, to 56 looms. Worsted goods will be the sole product and manufacturing will be started in January. The new mill is modern in every detail and the machinery will be operated by electric power. For the present no dyeing will be done. The company has capital stock of $100,000. Zadock Wolff of the firm of Baruch, Wolff & Co., New York, is president; Ernest W. Tinkham, treasurer, manager and buyer, and Robt. Dawson, superintendent. The output will be sold by Baruch, Wolff & Co.

*Washington, Washougal. Ground has been broken for the new woolen mill and the building will be completed and machinery set up at as early a date as possible. The new company, which has been incorporated with authorized capital stock of $200,000, is known as the Union Woolen Mills and has taken over the Union Woolen Mills of Union, Ore. Frank J. Bailey, president of the new company, owned the plant, but as he did not like conditions in Union, offered to move the plant to Washougal if the citizens would take $15,000 worth of the stock, or enough to erect new buildings. They subscribed for $17,000 worth of stock. This is a 2-set mill, equipped for making blankets. At first machinery will be operated by steam power, but later by hydro-electric power. A Mr. Burgess is superintendent of manufacturing.

Enlargements and Improvements.

Canada, Ontario, Dunnville. The Erie Woolen Mills operated by John Slingsby, will probably be doubled after the first of the new year.

Canada, Ontario, Ingersoll. New machinery equipment has been added by the Thomas Waterhouse & Co., Ltd., during the past few months and plans are being made to further increase the capacity before the end of the year.

Canada, Ontario, Simcoe. A new 80 h. p. gas engine is being installed by the Brook Woolen Co., Ltd.

Canada, Ontario, Preston. George Pattinson & Co., manufacturers of cassimeres, overcoatings, tweeds and similar goods, wil add a large addition to their plant which will nearly double the floor space. The present building used for dressing will be removed and replaced by a new structure which will be equipped for carding and spinning. An additional story will be put on the main part of the mill.

*Connecticut, Mechanicsville. The force of laborers working on the enlargement to the plant of the French River Textile Co. has been increased to insure the completion of the new mill on time. This is a 165 by 95-foot enlargement which will be equipped with 100 looms.

Connecticut, Norwich. The Saxton Woolen Corp. has installed a sprinkler system for fire protection. Manufacturing has been resumed after an idleness of three weeks.

Illinois, Chicago. Contract has been let by the Olson Rug Co. for a new factory building to be located at the corner of Laflin and Monroe Sts. The mill will be 75 by 125 ft., 5 stories and basement, of modern mill construction. The estimated cost is $60,000.

*Maine, Houlton. The foundation for the extension to the plant of the Houlton Woolen Mills has been completed, but work will not be started on the super-structure until spring. As noted previously, the addition will be equipped with their woolen machinery, which includes two sets of cards and six looms.

Maine, Newport. Repairs are being made on the plant of the Newport Woolen Co. and manufacturing has been suspended while they are in progress. It is expected manufacturing will be resumed just as soon as the repairs are finished.

Maine, Sabattus. An addition is being built to the power department of the Webster Woolen Co. and a 50 h. p. steam engine will be installed for use during periods when the water is low in Sabattus Pond. During the past year three additions to the plant have been erected, but all the proposed new machinery equipment has not been installed.

*Maine, Waterville. The capital stock of the Wyandotte Worsted Co. has been increased from $125,000 to $175,000. Recently work was started on two additions to the plant.

Massachusetts, Canton Junction. A new 250-h. p. engine has been installed in the Neponset Woolen Mills.

Massachusetts, Clinton. Nine looms have been installed in the building formerly occupied by the Pickford Worsted Co., by the Belle Vue Mills. A new pump has been installed in the main mill of the Belle Vue Co. They report the best business that the concern has experienced for some time.

Massachusetts, Medway. The Fabyan Woolen Co. of Stafford Springs, Conn. will start up the Sanford Mill as early as possible. Repairs are being made to the plant and a storehouse will be built. It will be remembered that the main plant of the Fabyan Woolen Co. was burned a week ago.

*Massachusetts, Millbury. R. W. Colby & Son

of Worcester, are building the new picker house for the Bowden Mill of the Felters Co. The enlargement will be 1 story high, 30 by 60 feet, of brick construction, with flat roof.

Massachusetts, Uxbridge. Work has been started on a new dam for the Davis & Brown Woolen Co. and the Uxbridge Worsted Co. which will replace the old log structure which has given considerable trouble in the past few months. The expense of the new structure will be borne equally by the two concerns.

*New Jersey, Passaic. It has been reported that the Gera Mills would spend about $500,000 in enlarging their plant. Very little information is available. In reply to request for information the company states they are building an addition to their plant in order to spin worsted yarns on the Bradford system for their own use and that no further information can be given out for about a month. The Gera Mills make worsted men's wear and dress goods, operating 1,000 looms. C. Bahnsen is general manager and Otto Bruckner is superintendent. C. Bahnsen & Co., 80-82 Leonard St., New York, are the selling agents.

New York, Amsterdam. Work on the new dye house for McCleary, Wallin & Crouse, has been started and will be pushed forward to completion as speedily as possible. This addition, which will be two stories high, 50 by 100 feet, will be located on Lyon St.

Ohio, Cleveland. A new mill, 90 by 300 ft., will be built by the Cleveland Worsted Mills Co. and may be carried up ten stories, although this feature has not been fully decided. The extension to the power house recently reported, which is now under construction, will give them about 6,000 h. p. and this increase is being made with a view to erecting a 10-story mill. General manager G. H. Hodgson states that the enlargement is necessary to provide an extension of the carding and combing departments and at least two stories will be required for this purpose. If it is decided to put up a 10-story mill French spinning and a dye house will occupy a part of the building.

Pennsylvania, Philadelphia. The buildings formerly occupied by the late Tracey Worsted Mills at 20th and Spruce Sts., has been sold to the Pearce & England Co., at a price which is not disclosed. The mill occupies a lot 222 feet on 20th St. with a depth of 285 feet on Spruce St. The Pearce & England Co. operate the Anchor Combing Works at Hancock and Huntingdon Sts., where they sort, scour and comb wool on commission, the plant at present containing 5 worsted combs, 6 worsted cards, 1 picker and 1 willow. This machinery is now being removed to the new address where the equipment will be tripled to enable them to handle a rapidly growing business. The company has been extremely handicapped in the old quarters and the purchase of this new building will enable them to carry on their business in a more extensive manner.

Pennsylvania, Stroudsburg. A new boiler has been installed in the Stroudsburg Woolen Mills, Thos. Kitson & Son, proprietors. No further changes are contemplated. . This concern operates 7 sets of cards and 60 looms, using both steam and water power. John Horan is superintendent and Thos. .J. Kitson, buyer.

Rhode Island, Washington. Construction work on the new dye house being erected for the Livingston Worsted Co. is nearing completion.

South Carolina, Greenville. Two new cards and a new fulling mill have been added to the plant of the McGee Mfg. Co. Forty-four looms are operated on wool blankets.

Mills Starting Up.

New Mexico, Albuquerque. The Wool Growers' Cooperative Woolen Mills is the name of the new concern which has taken over the old Rio Grande Woolen Mills and they will begin manufacturing blankets in about three weeks. At the present time the mill is being put in working condition. They will start with two sets of cards and 8 looms and later expect to increase this equipment and make all sizes of woolen yarns, blankets, cassimeres, sweaters and other wool knitted goods. The plant is equipped with complete dye house and machinery will be operated by electric power. The new company has capital stock of $25,000, classified as $10,000 common, and $15,000 preferred. Magnus Brown is president and buyer and Silvesta Mirabal is treasurer.

KNIT.

*Indiana, Richmond. Good progress is being made by the Richmond Underwear Co. on the plant under construction. A. J. Harwood, formerly with the Lewis Knitting Co., of Janesville, Wis., has been engaged as superintendent of manufacturing and will take charge within a few days. This new company is controlled by the men who control the Atlas Underwear Co. of Piqua, O., and a line of goods similar to those made by the Atlas Co. will be produced.

*Massachusetts, Florence. Twenty-four knitting machines have been received for the new Northampton Silk Co. and four of these have been set up and are in operation. It is said the total equipment will be 50 machines. This company is controlled by the McCallum Hosiery Co. of Northampton.

Pennsylvania, Doylestown. T. W. and R. R. Tustin are operating a knitting plant in this town on a line of silk neckties which they are selling direct under the name of the "No Stretch" pure silk hand made neckwear. The Apollo Knitting Co. is the name under which they are conducting their operations.

*Pennsylvania, Philadelphia. The Bridesburg Hosiery Mills Co., recently established at Edgemont and Kirkbride Sts., Bridesburg, has applied for a charter with capital stock of $5,000. The officers of the company are Chas. Stark, president and superintendent, and Chas. Rose, treasurer. The production consists of 220-needle mercerized and plain gauze hosiery, and is sold through J. P.

Quinlan, 346 Broadway, New York. The plant has been equipped with 20 latch needle knitting machines, 4 loopers and 1 sewing machine, using single 30s and 2/60s yarns on cones.

Pennsylvania, Philadelphia. Two hundred knitters are to be installed in a portion of the building at the S. W. cor. of Coral and Adams Sts., to be operated on mercerized half hose by William F. Taubel of Riverside, N. J., as a branch of the main mill in that town.

Pennsylvania, Philadelphia. William G. Thudium, formerly of the late Crown Kniting Co., has started a plant at Mascher and Turner Sts., with 40 knitters, 5 loopers and 1 sewing machine for the manufacture of 220-needle ladies' seamless hosiery. The plant is run under the name of the William G. Thudium Hosiery Co.

*Pennsylvania, Reading. The new Oakbrook Hosiery Co. at Oakbrook has begun operating 28 knitting machines. Isaac Eberly of Reading is president and superintendent, and Wm. G. Leininger of Mohnton is treasurer.

Enlargements and Improvements.

Canada, Ontario, Dunnville. The Monarch Knitting Co., Ltd., is moving machinery into the new modern 4-story mill.

Canada, Ontario, Thorold. It is reported that Penmans, Ltd., will double the capacity of their branch mill at Thorold and add a new dyeing department.

Canada, Ontario, Woodstock. The Oxford Knitting Co., Ltd., expects to have the new dyeing and bleaching plant in operation by November 15. The entire plant is to be operated by electric power from the Government electric power plant.

Columbia, Barranquilla. A hosiery department is to be added to the knitted underwear mill of J. Henry Helm. At present the plant contains 27 knitting machines imported from Germany. The owner of the mill will be pleased to receive samples, catalogues and proposals from American manufacturers and dealers in knitting materials, machinery and supplies.

Connecticut, Poquonock. A new cone winder has been installed in No. 3 Mill of the Durham Hosiery Co.

*Delaware, Wilmington. Work has been started on repairing the damage caused by the recent fire in the plant of the Glen Hosiery Co. The loss was about $900 and has been adjusted by the insurance company. They are busy on the production of 750 dozen hosiery daily. Clarence Prettyman is president; Chas. B. Prettyman, treasurer. 205 knitting machines and 80 sewing machines are operated.

Georgia, Columbus. The Perkins Hosiery Mills have expended $25,000 for fly frames, cotton openers, electric motors, pumps, etc. There are no further plans for improvements.

Georgia, Columbus. The directors of the Massey Hosiery Mills have decided to make some improvements, including changes in the dye house, which will cost approximately $25,000. J. D. Massey is secretary, treasurer and buyer. It will be remembered the Massey Hosiery Mills took over the Topsy Hosiery Mills several months ago.

*Illinois, Belleville. The new buildings of the Belleville Hosiery Mills are nearly completed. Work will be started on setting up the machinery November 1 and the new plant will be in operation at the earliest possible date, as they have more work than can be attended to in the old plant. The cost of the new building is $20,000.

Indiana, Fort Wayne. Improvements are being made in the dyeing department of the Wayne Knitting Mills, Inc.

Indiana, Fort Wayne. At a meeting of the stockholders of the Old Fort Knitting Mills it was decided to issue $50,000 additional preferred stock and to increase the equipment 33 per cent.

*Indiana, Hammond. The Hammond Knitting Co., recently reported incorporated, is doing a successful business and employing 18 hands. They plan to increase the machinery equipment and increase the number of hands to 40 in the near future. At present only mittens and gloves are manufactured, but it is expected lines of sweater coats, toques and other knit goods will be added shortly.

Massachusetts, Chicopee Falls. The capital stock of the Taylor, Bramley Co. is to be increased for the purpose of enlarging the plant. No definite plans of enlargements have as yet been made, but the capacity will be increased about 25 per cent. and part of this increase will be secured by transforming the brick storage building into a factory building and equipping it with machinery. This work will probably be done this fall.

*Michigan, Bay City. On account of long delays experienced in the steel work construction much more time has been consumed in the erection of the addition to the plant of the World's Star Knitting Co. than was planned. The date on which manufacturing will be started in this enlargement is yet undecided.

*Michigan, Grand Rapids. The contractor has nearly completed work on the new 5-story mill of the Globe Knitting Works on Commerce St. As each floor is finished it is occupied and it will be only a very short time before the complete addition is in full operation.

New York, Amsterdam. The Van Brocklin & Stover Co., manufacturers of underwear, who have been located for many years at Livingston and Chuctanunda Sts., are removing to the buildings at West Main and Ann Sts., recently acquired by them and formerly used by the Magneto Electric Co. The buildings consist of No. 1 Mill, 50 by 200 ft., two stories high; No. 2 Mill, 60 by 200 ft., and a newly constructed brick and cement dye house. Extensive alterations and improvements for knitting purposes give the company about 44,500 square feet of floor space. The new plant is equipped throughout with electric power, up-to-date sanitary arrangements, and a modern system of sprinklers for fire protection. The officers of the company are located in the No. 1

Mill on Ann St. Part of the machinery equipment is in operation in the new quarters.

New York, Amsterdam. Reports that the Atlas Knitting Co. has sold its plant to the New York Central & Hudson Rever Railroad are without foundation. The company has no intention of going out of business, but on the contrary will increase the output 20 per cent. in order to supply the present demand for the class of goods made. At present preparations are being made to shut down ten days for repairs, resuming operations November 1 on the night and day schedule on which the plant has been run for the last five years. W. C. Schaufler is treasurer and buyer.

*New York, Broadalbin. The installation of the new water wheel has been completed by the Broadalbin Knitting Co., Ltd., and no further change will be made for the present.

*New York, Brooklyn. The new mill being built by Samuel Rottenberg, proprietor of the Utopian Knitting Works, is to be completed about February 1, and the present plant at 232 Throop Ave. will be moved into it and increased to give total equipment of 76 knitting and 60 sewing machines. It is expected employment will be given to about 200 hands. In the new mill the machinery will be driven by electric power. Mr. Rottenberg personally attends to the buying.

New York, Clayville. It is reported the Clayville Knitting Co. is planning an enlargement which will double the present output.

*New York, Elmira. It is now understood that the Ironwear Hosiery Co. will remain in Elmira and enlarge the present plant. The company negotiated with other cities, but evidently has been unable to make satisfactory arrangements for removing.

New York, Herkimer. The Mark Mfg. Co.'s plant, which has been idle for some time, has been purchased by the Union Mills. Extensive alterations will be made to the plant and new machinery installed. J. Howard Mark, president and manager of the old company, may have charge of the plant for the Union Mills, but no definite arrangement as to this has been made.

New York, Utica. What is known as the Quinn property at the corner of South and St. Vincent Sts. is to be used by the Frisbie & Stansfield Knitting Co. as the site for a new mill for the Kendall Dept. now located in the old Peckham Foundry Bldg. at Catharine St. and Third Ave. The building on the new site, formerly used for a brewery, is being torn down and permission has been granted the company to put up the proposed new mill which will be a duplicate of Richelieu No. 2, recently completed. The new Richelieu Mill is 154 by 54 ft., 4 stories high, and is of the most modern construction and equipment throughout. The building will be put up by the same builders that put up the new Richelieu Mill, Geo. W. Shippey doing the mason work and Henry A. Kassing, the carpenter work. It is expected the building will be completed early in the new year. A separate power house will be built, 35 by 45 ft., and power equipment will include a 150 h. p. boiler and engine with direct connected dynamo.

New York, Woodhaven. D. Nusbaum & Co., of Brooklyn, have completed arrangements to build a mill here, 2 stories high, 100 by 200 ft. The present plant at Wythe Ave. and Rutledge St. will be removed to the new building on its completion and some addition will be made to the machinery equipment. At present sweater coats, bathing suits and fancy knit goods are manufactured on 36 full fashion and 24 flat knitting machines and 14 hand frames. Their New York office is at 160 Fifth Ave. D. Nusbaum is president.

North Carolina, High Point. One hundred and twenty-five knitting machines will be added by the High Point Hosiery Mills, Inc., in the new mill recently erected. The present equipment is 400 latch needle knitting machines operated on men's, women's and children's hosiery, the product being dyed and finished at the plant. J. H. Adams is treasurer and buyer.

*Ohio, Cleveland. The new 6-story mill being built for the Green-Haas-Schwartz Co. is to be finished and all machinery installed by February 1. The new equipment will include 20 knitting machines, 30 ribbers and 25 sewing machines. Sweater coats, fancy knit goods and novelties are produced by this company. Meyer Jaskulek is president; I. H. Green, treasurer; E. E. Schwartz, secretary; B. B. Haas, superintendent, and J. C. Sampliner, buyer.

Ohio, Mentor. Plans are being made by the Mentor Knitting Mills Co. to double the production of the plant. New machinery will be installed in the present buildings as early as possible and if necessary a new mill will be erected. Late in 1909 the capital stock was increased to $1,000,000.

*Pennsylvania, Easton. The Gold-Wiley Hosiery Co., Inc., of Tatamy, Pa., expects to begin building operations on a plant early in the spring to dye and finish goods and add some new knitting machinery in Easton. In the meantime plans are to be made for the proposed plant. This company has capital stock of $70,000. Miller R. Wiley is president and buyer; David Balp, treasurer; and Harry Carter, superintendent.

Pennsylvania, Philadelphia. The World Knitting Co., located at 26 North 3d St., one of the new concerns recently started here for the manufacture of sweater coats and fancy knit goods, is reported as having recently received a large order for bathing suits which has compelled them to triple the size of their plant. New machinery for both knitting and finishing purposes has been ordered and will be installed as soon as delivered.

Pennsylvania, Philadelphia. Morris Starrels, 2126 E. Dakota St., manufacturer of sweaters, bathing suits, athletic and fancy knit goods, operating 25 knitters and 6 sewing machines, is reported as increasing his entire equipment and also doubling his finishing department, new machines having been ordered.

Pennsylvania, Philadelphia. The Excelsior Underwear Co., who removed from Germantown two

or three years ago, have leased a portion of the building at 5155 Wakefield St., Germantown, into which they are removing their equipment from Hatfield, Pa. They are manufacturers of ladies' cotton ribbed underwear with 29 latch needle knitters and 53 sewing machines. Their finishing department, which has been located on Berkley St., below Germantown Ave., will also be removed and consolidated with the main plant at the new address.

Pennsylvania, Philadelphia. F. E. Munich, who has been located at Jasper and York Sts., in the Bromley Mills, where he manufactured women's fine gauge seamless hosiery of cotton and lisle yarns, 200 and 240-needle goods, with 16 spring and 150 latch needle knitters, has removed his plant to the building at 2720 Hope St., where more room has been secured. His production is sold direct.

Tennessee, Chattanooga. A small addition, 40 by 40 ft., is to be built for the Davis Hosiery Mills at a cost of $2,000. Huntington & Sears, James Bldg., Chattanooga, are preparing plans.

Virginia, Norfolk. The Northside Knitting Mills have been chartered with capital stock of $50,000. Thos. H. Haynor is president and D. Tillar l'Anson, secretary and treasurer. This concern purchased the knitting mill at Lambert's Point, added new equipment, and has begun manufacturing men's and women's underwear with L. B. Cochrane as superintendent.

*Wisconsin, Delavan. Construction work was begun on the new mill for the Bradley Knitting Co. on September 25 and contract calls for completion of the building by January 15. The building will be 3 stories high, 150 by 50 ft. An additional story is also to be added to the old mill. From 100 to 150 hands will be employed in this addition.

Wisconsin, Marinette. The Marinette Knitting Mills are unable to complete orders on time and it is rumored that a large addition will be constructed within a short time. They make sweater coats and similar goods.

Mills Shutting Down.

New York, Milton. The Milton Mills, with a capital of $10,000, manufacturers of men's flat and mesh underwear, fancy knit goods, astrachans, stockinets, jersey cloths and eiderdowns, with 25 knitters and 40 sewing machines, and a bleach and dye house, are shut down. The plant is for sale and will be sold as a going plant or in part. Indications are that it will not be started up again by its present owners.

New York, Waterford. The Novelty Knitting Underwear Co. has shut down indefinitely and it is reported will not be started up again under the old management.

SILK.

New Mills.

New Jersey, Paterson. A broad silk plant of 24 looms is being started in the Essex Mill by A. Shoret, an experienced silk worker, who has been connected with several enterprising concerns for the past three years. An increase to 40 or 50 looms is expected to be made later.

New Jersey, Paterson. A new concern has just begun manufacturing in the Strange Mill under the name of the Acme Silk Co. Broad silks will be made on initial equipment of 30 looms, although it is expected this number will be increased later.

New Jersey, Paterson. A. and C. Salzberg have started a 10-loom broad silk plant at 93 River St.

New Jersey, Paterson. A new concern is about to start a broad silk plant of 10 looms at 93 River St. under the style of the King Silk Co. A. Goldberg and H. Jacobs are the men interested.

New Jersey, Paterson. A new concern known as the Novelty Silk Co. has located at East 18th St., corner of Governor St. Broad silks are manufactured on 20 looms. Chas. O'Neill is said to be interested.

*Pennsylvania, Juniata. Good progress is being made on the construction of the new silk mill for Schwarzenbach, Huber Co., which is being built on Broadway, from 13th to 14th Aves. The dimensions of the mill are 245 by 197 ft. Geo. H. Keiffer of Mt. Carmel is doing the construction work and will finish his contract by Nov. 15. It is expected the mill will be ready for operation early in January. Winding, warping, twisting, weaving and dyeing will be done, the equipment including 400 looms to be operated by electric power.

*Pennsylvania, Northampton. John H. Meyer Co., 77 Worth St., New York, is the concern interested in the proposed John H. Meyer Silk Mfg. Co. which will build a 400-loom mill here, beginning work in January. The John H. Meyer Co. is interested in the Army & Navy Cotton Duck Co., Wilkinsonville, Mass., the Springdale Finishing Co., Canton, Mass., and the Central Silk Mfg. Co., Inc., Siegfried, Pa.

*Pennsylvania, Peckville. A building is under construction in which it is planned to locate the proposed silk throwing plant, the erection of the building being independent of the organization of the silk company. There is no doubt, however, that a company will be organized and manufacturing started about the first of the year. The mill is to be equipped with gas producer power plant. F. A. Peck of this place heads the enterprise and has associated with him W. H. Kilgour, manager of the Ashley Silk Co. of Scranton.

Enlargements and Improvements.

New Jersey, Paterson. Looms have been ordered for the annex of the Union Ribbon Co. in the Rhinehardt Mill. Additional machinery and other materials will not be ordered until Mr. Crowther returns from a trip through the West.

New Jersey, Paterson. On account of an increase in business, Frank & Dugan are about to add 24 ribbon looms to their plant in the Cooke Mill on Market St.

*Pennsylvania, Mayfield. Estimates on machinery equipment for the enlargement now under construction are being secured by the Mayfield Silk Co., Inc. A 150 h. p. engine will be installed in the new power house. Between $40,000 and $50,000 is to be expended on this improvement.

MISCELLANEOUS.

*Connecticut, Bridgeport. Lewis A. Miller of Meriden is the contractor building the enlargement to the plant of Alb. & E. Henkels at Connecticut Ave. S. M. Greene of Holyoke, Mass., prepared the plans and specifications. The structure will be 1 story high, 60 by 190 ft., as noted previously, and will be completed in November.

*Maine, Lewiston. Excavations have been made for the foundation of the new dye house of the Lewiston Bleachery & Dye Works and part of the foundation is being laid. The building will be of brick construction, similar to the other buildings of the plant, and will be 2 stories high, 200 by 60 ft.

*Massachusetts, Assonet. Practically all work on the foundation for the new mill of the Puritan Mills has been completed, and a concrete flume from the new reinforced steel and concrete dam is nearly finished. It is estimated 136 h. p. will be developed. The mill will be of frame construction and every effort will be made to complete it as soon as possible as 90 per cent. of the machinery equipment has been ordered.

Massachusetts, Cambridge. The addition to the plant of the Boston Woven Hose & Rubber Co. will be 66 by 97 ft., 3 stories and basement, of reinforced concrete construction. It will be located at the corner of Binney and Portland Sts.

Massachusetts, Fitchburg. T. Martin & Bro. Mfg. Co. of Chelsea have purchased the plant of the Houghton Web Co. and will operate it as Dept. F, beginning manufacturing at once. H. C. Winton will be retained as superintendent. The buying will be done by A. B. and H. J. Martin at Chelsea. The transfer includes the real estate, machinery and stock and the outlook for the steady operation of the plant is better than at any previous time.

Massachusetts, New Bedford. Eugene S. Graves, formerly head of the chemistry and dyeing department of the New Bedford Textile School and until recently in charge of the New Bedford and Agawam Finishing Co. of Wareham, is interested in the organization of a new company to build a bleaching and finishing plant in the North End. The men interested have investigated sites suitable for the location of a bleachery, but it is understood have not as yet decided where to locate.

*Massachusetts, North Brookfield. Contract for construction of the new weave shed of the Oxford Linen Mills has been awarded to Wm. F. Fullam. Work will be started at once on tearing down and removing buildings which now occupy the site of the new mill. The enlargement, without machinery, will cost between $30,000 and $40,000.

*Minnesota, Winona. The Oxford Linen Mills of North Brookfield, Mass., have awarded contract to L. L. Summers & Co. of Chicago for the construction of the new buildings for the Oxford Linen Mattress Co. of Winona. Work will be started on the buildings shortly and they are to be ready for occupancy late in the spring of 1911. It is stated the Oxford Linen Mattress Co. will manufacture fiber for the Oxford Linen Mills of North Brookfield and use the waste in the manufacture of mattress stock.

New Jersey, Bridgeton. The Geo. W. Preston Co. has been incorporated with capital stock of $100,000 to manufacture textile fabrics. The incorporators are W. H. Bacon, R. M. More and H. D. Paulin, all of Bridgeton. As noted in September, Geo. W. Preston & Co., of Paterson, manufacturers of Turkish towels, face cloths, bath mats and other Terry cloth novelties, will remove from Paterson to Bridgeton. The new company is an incorporation of this business which was made necessary by inadequate facilities under the old arrangement. The capacity is to be increased about 200 per cent.

New Jersey, Jersey City. The New Jersey Car Spring & Rubber Co. will shortly add additional circular looms. At present five of these looms and 500 twister spindles are operated in the manufacture of high grade mechanical rubber goods, linen and cotton fire hose. Their main office and works are at Jersey City. John J. Fields, Jr., is president; Geo. B. Dickerson, secretary; Townsend Cocks, treasurer, and John M. Lion, superintendent.

*New Jersey, Newark. Kaltenbach & Stephens, silk ribbon manufacturers of Brooklyn, N. Y., and Allentown, Pa., have awarded contract for the new finishing plant in Newark to Ritter & Smith. Work is to be started at once and the new structure will be completed March 1. On completion of this department the company will build an addition to the mill at Allentown.

*New York, Little Falls. The Dingman Co. has organized with James E. Dingman, president and superintendent; G. W. Norris, treasurer and buyer. Picking and garnetting machinery will be set up at once in a building on Mohawk St. Cotton and jute bats, mattress felts and shoddies will be manufactured. Employment will be given to about 30 hands.

Pennsylvania, Lenni Mills. Changes incident to the removal of the branch finishing plant of the Victoria Plush Mills from Paterson to Lenni Mills have been completed. A new building has been erected, two new drying rooms built, and the plant has been generally repaired and put in good condition.

Pennsylvania, Philadelphia. The Indian Braid & Lace Works, with Rosenau, Frankel & Co., as

proprietors and Leo. Silverman as superintendent and buyer, are equipping a plant at Indiana Ave. and A Sts., with 15 knitting machines and 500 braiders, on which they will manufacture plain, mercerized and silk braids, edgings and laces for the knitting trade.

Pennsylvania, Philadelphia. Splane & Armstrong, 2111 E. Westmoreland St., printers of hosiery, bands and labels, are very busy in all departments. The plant which was recently doubled has again been enlarged and is working until 9 o'clock at night. The owners of the plant state that they have recently put in a department for the printing of general mill stationary in addition to their other lines of work.

FAILURES AND SUSPENSIONS.

*Pennsylvania, Lititz. John A. Bohler, individually and trading as the Lititz Hosiery Co., has been adjudged an involuntary bankrupt. Redmong Congyham was appointed referee. The concern manufactured men's half hose on 27 knitting machines, selling the product direct.

Pennsylvania, Philadelphia. Acting upon the petition of Harry D. Bates, Edward Pirney, Ernest Haig and H. R. Sack, stockholders of the Penn Worsted Co., the United States Circuit Court has appointed Harry T. Kent of Clifton Heights receiver of the company under a bond fixed at $50,000. The company, which is located at 167 West Oxford St., has a capital of $120,000, with H. R. Sack as pres. and supt., manufacturing silks and silk resists and fancy twists for woolen and worsted manufacturers and woolen and worsted fabrics with 40 broad looms, 6,000 worsted and 3,000 silk spindles, the production being sold direct. In a statement up to Sept. 30th last the company shows that its liabilities are $294,150.05 and its assets are scheduled at $300,789.82. From that date up to the present time the company states that it has conducted its business at a loss.

FIRES.

Connecticut, Hartford. Fire destroyed the plant of the Aetna Braid Mfg. Co., 352-58 Asylum St. Plain and fancy braids were manufactured.

Connecticut, Gurleyville. Fire caused loss of several hundred dollars in the plant of O. G. Hanks & Co., manufacturers of machine twist and sewing silks. The roof caught fire from the smokestack, but the blaze was extinguished with little damage being done other than to the roof. Their post office address is Mansfield Centre.

Connecticut, Stafford Springs. The second fire at Stafford Springs in twenty-four hours destroyed the main plant of the Fabyan Woolen Co. The fire started in the card room, which was located on the second floor of the main building, and spread very rapidly, making it difficult for some of the employes to escape. Thirteen sets of cards, 88 broad and 58 narrow looms were operated on woolen goods. The loss is fully covered by insurance. Herman Rawitser, president of the company, has announced that the plant will be rebuilt.

FACTS AND GOSSIP.

Canada, Ontario, Alton. Wm. Algie, Jr., his brother, and A. D. Lake have leased the Beaver Mills and will operate the plant beginning Jan. 1, 1911. Knit goods and woolen yarns will be the products.

Canada, Ontario, Georgetown. A plan to rebuild the plant of the Alfred Sykes Co., destroyed by fire some time ago, is being agitated.

Canada, Ontario, Simcoe. Representatives of Penmans, Ltd., of Paris, were in Simcoe recently conferring with the town authorities with a view to establishing a knit goods finishing plant in this city. There is a possibility also that a knitting mill may be established here by Penmans, Ltd. Difficulty has been experienced in securing a suitable supply of female labor.

Massachusetts, Lowell. The carding, picking and spinning machinery of the Lowell Hosiery Co. is in good condition and the only changes that are to be made are the adding of new knitting machinery. It will probably be decided at the next meeting of stockholders to add this machinery. Another proposition has been put forward by the directors for the approval of stockholders calling for the reduction of the capital stock from $200,000 to $50,000 and then raising the capital to $100,000 by issuing $50,000 of new stock to be taken by the present stockholders.

*Michigan, Battle Creek. Negotiations are pending, with slight chance of being matured, that contemplate the establishment of a branch factory in Battle Creek by a concern manufacturing underwear, generally understood to be the Stevenson Underwear Mills of South Bend, Ind.

Minesota, St. Paul. The Business League of this city is looking for a location for a knitting company which it is said will locate here if a suitable location can be supplied. The concern interested has a rating of $200,000 and employs about 225 hands.

New York, Utica. A new line of children's vests is being manufactured by the Walnott Knitting Co. John E. Crotty, formerly of the Artistic Knit Goods Co., is superintendent.

New York, Utica. Lines of men's lisle and mercerized hosiery have been added to the products of the Utica Hosiery Co., C. H. Yates & Co., proprietors.

New York, Utica. There is a possibility that the reorganization of the Genesee Underwear Co. will be completed and manufacturing started about December 1. The plant has been idle since last December.

New York, Watertown. The Shaughnessy Knitting Co. has added a line of men's underwear. Heretofore women's and children's underwear has been made.

North Carolina, Mayodan. W. L. Pannill, care of Mayo Mills, Mayodan, N. C., is interested in establishing a knitting mill.

Pennsylvania, Hawley. M. Wood, formerly of the firm of Wood & Bower, has started a new

plant on fancy knit goods, opereating 20 knitting machines and 10 sewing machines by electric power. Mr. Bower bought Mr. Wood's interest in the old concern.

Pennsylvania, New Cumberland. The Pennsylvania Underwear Co. has been incorporated with capital stock of $50,000. The new corporation succeeds to the business of the same name with plant here and office at 145 No. Front St., Steelton, Pa.

Pennsylvania, Philadelphia. The 3-story building at 1711 to 1717 North Waterloo St., measuring 55 by 40 feet, has been sold to the Colonial Knitting Mills for $6,000, the property having an assessed valuation of $4,800. The Colonial Knitting Mills Co., of which Paul Glouton is the superintendent, is now located at 458-82 N. Orianna St., where they are manufacturing gloves, mitts and novelties of cotton, mercerized, woolen and silk yarns and a line of fine silk neckties, the plant containing at present 3 spring and 12 latch needle knitters and 4 sewing machines.

*Pennsylvania, Phoenixville. Chas. J. Baker has been elected president, and J. Clarence Parsons, treasurer of the Parsons & Baker Co., the new corporation recently chartered with capital stock of $100,000 to succeed to the business of Parsons & Baker. Mr. Baker is superintendent of the plant and Mr. Parsons attends to the buying. They manufacture women's knit underwear on 50 knitting and 90 sewing machines, selling through Isaac L. Stern, New York Life Bldg., New York City.

Pennsylvania, Walnutport. It is reported that parties in this town are negotiating with the Carbon Knitting Co., of Lehighton, Pa., with a view to having them remove their plant to Walnutport, which is across the river from Slatington, Pa. The new parties propose putting up in the neighborhood of $10,000 for the purpose of increasing the equipment of the mill and enlarging its output. The Carbon Knitting Co. manufactures women's and children's ribbed underwear, operating 7 knitting and 8 sewing machines.

Tennessee, Knoxville. A new concern is being organized under the style of the Holston Underwear Mills with capital stock of $50,000 and will consolidate the Harriman Knitting Mill of Harriman, and the Biddle Mfg. Co. of Knoxville. Fifty knitting machines will be operated on women's cotton ribbed underwear. F. H. Weiss of the Holston Mfg. Co. at Lenoir City, will be president; Mr. Biddle, vice-president, and Chas. M. Cooley, secretary and treasurer. Operations will begin in the Biddle plant on Vine Ave. about November 1.

Massachusetts, Boston. At the offices of the Aetna Mills it was stated that a joint selling organization has been formed by the Aetna Mills of Watertown, Mass., the Scotia Worsted Mills, Woonsocket, R. I., and the Strathmore Worsted Mills, Concord Junction, Mass., for a more effective selling of the products of these mills. Offices have been opened in the Fifth Ave. Bldg., New York City, with branch offices in Boston, Philadelphia and Chicago.

Massachusetts, Fall River. The Annawan Mills of Fall River have filed certificate of incorporation with capital stock of $50,000. Robt. P. Borden, Geo. H. Hills and James E. Osborn, all of Fall River, are the incorporators. The new company will handle waste from some of the local cotton mills, the disposal of which has been unsatisfactory to the mills for some time.

Massachusetts, Fiskdale. There is a report that the Hamilton Woolen Co. of Amesbury and Globe Village, Mass., will purchase the Fiskdale Mills.

Massachusetts, Lawrence. The new mill of the United States Worsted Co. on South Broadway, which is in course of construction, will be completed and equipped by September, 1911. It will be 7 stories high and will require 1,000 operatives.

Massachusetts, Lawrence. The formal acquisition of the Wood Worsted Mills by the American Woolen Co. has taken place in accordance with the unanimous vote of the directors of the American Woolen Co. and of the Wood Worsted Mills.

Massachusetts, Malden. The brick manufacturing building at Oak Grove, owned by Geo. E. Adams of Boston, has been leased by the Lowry Fabric Mfg. Co. of Pawtucket, R. I., and will be fitted up for the manufacture of their grass fiber mats and carpets.

Massachusetts, North Adams. The Plunkett interests have purchased the Williamstown Mill of Williamstown, Mass., and the No. Pownal Mills at No. Pownal, Vt., from the Arnold Print Works and will take possession in a few days. Both plants will be operated in connection with the Greylock Mills of North Adams. It is understood that both mills will be overhauled and put in good condition and a large amount of new machinery installed. Theo. R. Plunkett, youngest son of W. B. Plunkett, treasurer of the Greylock Mills, is to have the active management of the newly acquired mills and will take charge immediately supervising the renovation of the property and installation of new machinery.

*Massachusetts, Rockland. C. O. Emerson, treasurer of the Emerson Shoe Co., states in reply to request for information of the newly incorporated Emerson Fabric Co. that they have simply organized and no fabric is being made and further that their plans are not yet matured. The purpose of the company, as stated in the articles of incorporation, is to manufacture linings for clothing, footwear, etc. Daniel S. Howard, Jr., and Arthur C. Folsom, president and clerk respectively of the new corporation, are secretary and assistant treasurer of the Emerson Shoe Co. Chas. O. Emerson is treasurer of both concerns.

*Massachusetts, Winchester. Dwight Smith has sold his interest in the Bacon Felt Co. and has resigned as agent, treasurer and director. It is probable that Bacon Bros., Inc., recently chartered with capital stock of $30,000, will succeed the Bacon Felt Co.

The Arcade Cotton Mills, Rock Hill, S. C., have placed an order for humidifiers with the American Moistening Co., Boston, Mass.

Massachusetts, North Adams. A new company known as the Hoosac Cotton Mills, headed by Wm. M. Butler of Boston and New Bedford, has purchased the Eagle Mills and the Eclipse Mills of the Arnold Print Works. The new company will be organized under the laws of Massachusetts, with capital stock of $1,500,000, classified as $750,000 preferred, and $750,000 common. $600,000 of the preferred stock is being offered for sale by Hornblower & Weeks of Boston. Nathaniel B. Kerr, treasurer and agent of the Butler Mill of New Bedford, will be agent and treasurer of the new company. Mr. Kerr will remain in New Bedford, taking over his new duties in connection with his present position.

Michigan, Battle Creek. W. H. Stephenson of South Bend, Ind., and the Battle Creek Industrial Association are working on a plan to locate a woolen mill or knitting mill in Battle Creek.

New Hampshire, North Salem. Some of the directors of the Atlas Mfg. Co. offer to purchase the outstanding claims against the company for 45 per cent., taking an assignment of the claims at once for cash if the offer is accepted. If this is done bankruptcy will be avoided. The company will not continue in business. The Atlas Mfg. Co. took over the plant and business of the Atlas Worsted Co. of North Salem, in October, 1909, and combined it with the business of the Eastern Webbing Co. of Lawrence, Mass., moving the equipment of the latter concern from Lawrence to the plant at North Salem.

*New Jersey, Hoboken. The previous report that Balas Freres, Ltd., are going out of business is correct. The machinery equipment, including 110 looms, is to be sold.

*New Jersey, Newark. The Thos. Behan Co., recently incorporated, will not manufacture, operating stores only. The new corporation succeeds to the business of T. J. Behan.

New Jersey, Paterson. The Novelty Silk Co. has been incorporated with capital stock of $50,000 by Robt Henmann, Cornelius J. O'Neill and James Tynis.

New Jersey, Paterson. P. and L. Freidenreich have purchased the plant of M. Lombaerde in the Harmony Mill and have started manufacturing. This is a 20-loom broad silk plant.

New Jersey, Paterson. John Strickland has retired from the silk business and his plant of 10 broad silk looms in the mill at 93 River St. is for sale. The machinery has been idle for several months.

New Jersey, Paterson. The Lion Silk Co. has moved from the Blackburn Mill to the new Strange Mill. Little, if any, room for an increase is gained by this removal. This company was formerly the Fuchs Silk Co.

*New York, Carthage. Negotiations for the establishment of a silk mill in Carthage have not been opened as yet and there is nothing on which to base the statement that a mill is to be started here. Representatives of the Theresa Silk Co. of Theresa, New York, have been here looking for a site and investigating labor conditions, power, etc. Other places have been visited with a like object in view and Carthage has no better chance than several other places to secure the mill if it is decided to remove or establish a branch.

New York, Jamestown. The Jamestown Towel Mills have been incorporated with capital stock of $5,000 to manufacture towels and similar fabrics. John T. Hall, Robt. P. Stewart and Theodore R. Sampson of Jamestown, are the incorporators.

New York, Little Falls. Reports to the effect that Whitman Bros.' plant has been appropriated by the State for barge canal purposes are somewhat misleading. The land appropriated is occupied by the storehouse, office and dwellings owned by the company, but does not affect the manufacturing plant. They filed a claim with the State Board for $126,719.

New York, Newburgh. The proposition of J. H. Walsh, of New York, to organize a new company to take over the Newburgh Steam Mills has failed. Under the proposed plan the Garner interests, the present owners, were to control the mill, holding 60 per cent. of the preferred stock.

New York, New York City. Clarence H. Kelsey, president of the Title Guarantee & Trust Co., has been appointed receiver for the Standard Cordage Co. This action is in connection with the proceedings for a voluntary dissolution of the company, as petitioned for by the directors several months ago.

New York, Penn Yan. The Duffy Silk Co. of Buffalo, is corresponding with local parties regarding the establishment of a branch here. No bonus is required, the requirements being simply an advantageous location and about 100 h. p., developed by water.

New York, Stuyvesant Falls. A new concern has been organized under the name of the Frisbee Mfg. Co., with capital stock of $25,000, to operate the Van Alen Cotton Mills, succeeding the Langdon Mfg. Co. Chas. Frisbee, vice-president of the Langdon Mfg. Co., is president of the new concern. A. V. A. Frisbee, secretary and general manager of the old concern, is treasurer and buyer for the Frisbee Mfg. Co. The plant contains 3,456 mule, 10,912 ring spindles and 390 looms on print cloths.

North Carolina, Ansonville. A. H. Richardson of this place is arranging for hydro-electric power development on the Rockly River, near Kendall Ferry, which it is estimated will cost about $400,000, and also for a $1,000,000 cotton mill.

North Carolina, Gastonia. It is reported the Ozark Cotton Mills are contemplating the installation of combers.

North Carolina, Greenville. F. G. James of this place is interested in a project to convert the plant of the Commercial Knitting Mills into a silk mill.

The Fitzgerald Cotton Mills, Fitzgerald, Ga., have placed their order for humidifiers with the American Moistening Co., Boston, Mass.

New Publications.

[Any work noticed under this head can be obtained through the office of this journal.]

The Textile Industries; by William S. Murphy, assisted by leading experts in textile technology; vol. IV, 176 pages, 6 1/2 by 10; The Gresham Publishing Co., 34 Southampton St., Strand, London, Eng. Price per volume, $3.00.

The fourth volume of this elaborate work includes chapters on the following subjects: Threads, twines and ropes; yarn measures; winding; warping, dressing and beaming; the plain loom and its development; the products of the loom; the power loom.

This volume has been kept at the high standard of the preceding three, which were reviewed in our October issue.

On the Wool Track; by C. E. W. Bean; 296 pages, 4 3/4 by 8 1/4, illustrated; John Lane Company, New York. Price, $1.50.

This is a book full of interest for all human beings, whether engaged in the growing and manufacturing of wool or not. The chapters were originally written for the Sydney Morning Herald, whose proprietors gave the author instructions to describe the wool industry from any point of view that he chose. He says in the introduction: "The wool industry turns out wool and meat and tallow and glue and cold cream and many other things. But the most important things it turns out are men. And so the articles dealt with men." This is what gives the story its human interest. But the reader will also learn much about sheep and wool and mutton and the great island Continent, inhabited now by English speaking people, although situated to the south of Asia and far from either the mother country or England. Americans should know more about Australia and New Zealand, for we are destined to closer relations with them. That is what makes Mr. Bean's book of especial value at the present time.

Silk and its Manufacture (Die Seide und Ihre Veredlung); by Max Dumont; 100 pages, 5 1/2 by 8 1/2; A. Ziemsen, Wittenberg, Germany. Price $1.50.

This is a condensed account of the various processes in manufacturing silk. It deals with the subject under the following heads: True silk, wild silk, the manufacture of silk, black silk, colored silk, bleaching, various shades, the manufacture of wild silk, color matching, dyeing artificial silk, dyeing silk garments, piece dyeing. The text is in German.

Business Literature.

Conveyors for Freight and Packages; Book No. 83; The Link-Belt Co., Chicago, Ill.

A 64-page catalogue containing a large number of excellent illustrations showing the different installations of conveyors for freight and packages, as installed by the Link-Belt Co. The carriers are shown loading and unloading vessels, carrying freight from the wharf to factories, conveying sugar in warehouses, tiering bags in storehouses, raising and lowering freight between floors, and transporting material in textile mills. An examination of this catalogue will be a revelation to many textile manufacturers who do not now realize the capabilities of this means of transporting raw materials and stock in process from one part of the mill to another.

Textile Motor Talks; The Westinghouse Electric & Manufacturing Company of Pittsburg, Pa.

This booklet compares the development of the textile type induction motor with that of the automobile. It points out the fact that the motor drive is doing for cotton machines what the vehicle motor and vehicle engine have done for the horseless carriage.

Recent Improvements in Wool and Worsted Spinning and Combing; The Amid Duron Co., 100 William St., New York.

This booklet of 43 pages gives particulars regarding a product known as "Duron," which is being introduced into this country and which is used in forming emulsions for wool preparatory to carding and combing. Among the claims made for it are the following: Duron emulsions are staple, free from soap and alkali. They are white and odorless and thus do not stain the material or cause objectionable odor in the goods. They are neutral, and do not injure the iron or leather parts of the machinery. This product has been used for years by Continental mills and the booklet gives testimonials from a number of leading European establishments. Full particulars are given for making and using Duron emulsions.

Corliss Engine Steam Economies and Friction Losses; Providence Engineering Works, Providence, R. I.

This bulletin relates to the Rice & Sargent Corliss engine steam consumption and friction loss. It is of special interest to all steam users. Data are given regarding both simple and compound engines of the condensing and non-condensing type. The various tests of which details are given were made by well known engineers, such as Prof. D. S. Jacobus, George H. Barrus and others, who in all cases represented the purchasers of the engines. Steam consumption as low as 18.33 lbs. per 1 h. p. are shown on a non-condensing compound engine at 150 lbs. pressure with saturated steam, showing an efficiency of 79.2 per cent. in the use of steam. On condensing compound engines at 150 lbs. pressure, the steam consumption run as low as 12.1 lbs. and on a condensing simple engine at 149 lbs. pressure the steam consumption was 20.98 lbs.

The friction load indicated horse power runs as low as 3.8 per cent. on a compound and 3.6 per cent. on a simple engine, while the mechanical efficiency at full load runs as high as 98 1/2 per cent.

The International Cotton Mills Corp., 86 Worth St., New York, have placed their order for humidifiers with the American Moistening Company, Boston, Mass., adopting the Comins Sectional Type of Humidifier.

Electric Motor Drives.

Electric drive could not be successfully introduced into so many widely different industries with such widely varying requirements as it has been if it were not for its almost unlimited flexibility. This flexibility is due in part to the elimination of the restrictions imposed by line shafts and belting. It is also due very largely to the great variety of operating characteristics obtainable from motors having the same size frames. This feature makes it possible to apply motors with standard size frames to many different types of machinery having operating requirements altogether unlike. It is therefore possible with electric motor drive to secure exactly the right starting and operating characteristics without incurring the expense which always accompanies the use of special parts. There are certain fundamental requirements, however, which must be incorporated in the design of every motor, whether it is to drive pumps, printing presses, laundry machinery, ice cream freezers or any of the thousand different types of machines that are driven by electric motors. The concern that builds the motors must be familiar with these requirements in addition to knowing just how their motors are to be applied for the best results. The Crocker-Wheeler Company of Ampere, N. J., whose experience in motor-drive extends over twenty-three years, have recently issued a bulletin on their Form 1 machine (Number 120) which contains a large amount of useful information on direct current motor design and is illustrated with half-tone cuts showing varied applications of these motors to other machinery. The information contained in it cannot fail to be of interest to anyone interested in electric motors and motor-drive. A copy will be sent on request.

Sixty Years in the Card Room.

We doubt if there is anyone working in the card room of a woolen mill today who has seen longer service in that department than Sam. Driver, Sr. On the 15th of October it was just sixty years since he went to work in the card room as a billy piecer.

He was born on the 12th of October, 1842, and on the 12th of October, 1850, after passing the doctor's examination and getting a certificate necessary, he went to work as a short timer, that is, he was half a day in school and the other half in the mill. At the age of thirteen, after getting another doctor's certificate to entitle him to work full time in the mill, he was promoted to card feeder and ever since that time has been almost steadily engaged in the carding department of woolen mills for many years past as overseer of carding. His last position was on the Pacific Coast with the Dolgeville Felt Mills and some little time ago he returned East and is now taking a well earned rest at the home of his son in Hartford, Conn.

Neild Mfg. Corporation, New Bedford, Mass., have adopted the American Moistening Co.'s system of humidifiers.

The Moore Light.

A lecture of interest to those engaged in the dyeing and textile trades was last month delivered by Prof. D. McFarlan Moore before the Franklin Institute. The lecture dealt chiefly with the white Moore vacuum tube light, which reproduces artificially the qualities of average daylight. The most effective part of the address was the demonstration Prof. Moore gave of the ability of this light to show colors as they would appear in daylight. The alteration that colors suffer under ordinary artificial light was shown by throwing upon a group of colored cloths, first the electric lights in the lecture room and then the light from the Moore window.

Textile Awards at the Brussels Exposition.

Among the exhibitors of textile machinery at the International Exposition at Brussels, Belgium, are the Herm. Schroers Maschinenfabrik, Krefeld, builders of silk machinery, plush and velvet looms, who have received the award of a gold medal.

The Franz Mueller Works of M. Gladbach, Germany, builders of universal napping machines and finishing machinery for velveteen and corduroy, have won the "grand prize." Both firms are well known in this country and represented by A. W. Buhlmann, textile engineer, 487 Broadway, New York.

"Hooked to the Biler."

The new mill which is being erected at Greystone, R. I., just outside of Providence, for Joseph Benn & Sons, is being equipped with elevators built by Craig Ridgeway & Sons of Coatesville, Pa. The equipment attracted much attention from people in the vicinity and while the elevators were being installed a good many manufacturers and building owners visited the plant to see them and were much pleased with their performance. This is the elevator which is "hooked to the biler."

Improved Finishing Machinery.

A. W. Buhlmann, 487 Broadway, New York City, textile engineer, returned in October on the SS. George Washington from an extended trip through the various European textile centers. Mr. Buhlmann goes abroad frequently to keep in touch with the developments in which he is interested. He informs us that he has made arrangements for representing a new line of machinery for finishing woolen and worsted, to give a spot proof unshrinkable finish ready for the needle. There are several machines employed for the complete operation and in the mills which he visited on the other side where they were in operation the manufacturers were highly pleased with the results.

Two carloads of paint were recently used on the immense Olympia Cotton Mills at Columbia, S. C., and another carload of the same kind of paint was used on the Monoghan Mills, Greenville, S. C., viz., Statesman 100 per cent. pure and Mill Light Gloss Enamel, manufactured by the Charles H. Brown Paint Co. of Brooklyn, N. Y.

A Textile Consulting Organization.

The increasing interest by textile manufacturers in the service offered by Arthur D. Little, Inc., chemist and engineers, 93 Broad St., Boston, Mass., has led to the establishment of a special textile department. The manager of this department is W. S. Williams, who for eleven years has been chemist at the Arnold Print Works, North Adams, Mass. Mr. Williams is a graduate of the Massachusetts Institute of Technology and thus combines technical training with practical mill experience.

While the textile manufacturer of today realizes more than ever the importance of the closest scrutiny of every item entering into the cost of his finished fabric, yet too many of them show little appreciation of the importance of proper supervision and regulation of the raw materials, supplies and chemical processes involved in converting it.

Within a few years there has been general recognition of the usefulness of the chemical engineer in connection with fuel and boiler room practice. The fuel engineering department of the A. D. Little laboratory is now very generally consulted in such matters. Another step was the recognition of the value of a lubricating expert, who should make independent reports and recommendations on the question of oils, lubricants, etc., and the establishment of a department for this work. These two special departments of this organization as well as the purely chemical branches have been constantly increasing the scope of their work with manufacturers and it is believed that the textile department in charge of a man familiar with textile problems, particularly those pertaining to dyeing, bleaching, finishing and printing, will meet with their approval and cooperation.

There are very few manufacturers so well satisfied with their own way of doing things that they will not gladly welcome the opportunity which this organization now affords for cooperation in the solution of their problems by consultation, analytical work and specific investigations. A booklet has been prepared which contains many interesting suggestions from the standpoint of the cotton, the woolen, and the silk manufacturer, the dyer, the bleacher, the finisher and the printer.

Sphinx Size.

For sizing wool and shoddy the Sphinx size, manufactured by the Arabol Mfg. Co., 100 William St., N. Y. City, is recommended. It is a heavy liquid and easily applied.

A Picture Ad.

An interesting illustrated advertisement which tells its own story is that of the Cell Drier Machine Co., viz., a photograph of a portion of their plant in Taunton, showing cell driers under construction on Sept. 23d. Incidentally, besides the work in progress, a good idea is had of the modern light and airy shop construction of their new plant.

Remek Type Transformers.

In the Hungarian language Remek means masterpiece. A line of lighting transformers has recently been placed before the public by the Crocker-Wheeler Company of Ampere, N. J., to which this name has been applied. These transformers are radically different in design from any others on the market at the present time. In this machine very low average core-loss and high average efficiency are said to have been effectually combined with many other desirable features. These results are obtained largely through the new and original features embodied in the design. The introduction of this transformer marks a new era in transformer construction. The descriptive bulletin which the Crocker-Wheeler Company has published on this subject, numbered 125, contains much information that must be of vital interest to lighting transformer users. A copy will be gladly sent on receipt of request.

Metal Bound Spools.

On a recent visit to the works of the Lestershire Spool & Mfg. Co., Lestershire, N. Y., our representative found that concern very busy. Their product consists of a full line of spools for all branches of textile manufacturing. Their particular specialty, on which they are doing a large business, is their metal bound spool which possesses many advantages that have already received the appreciation of the trade. This metal protection not only increases the life of the spool three-fold, but also protects both the outside and inside. It prevents rust and consequently eliminates all the possibilities of stains in the yarn, also prevents splintered edges that would break the yarn. The weight is increased very little. The number of repeat orders which were shown our representative and the long list of leading mills of the country adopting this spool, demonstrate its success. Samples and particulars will be sent on request.

A New Southern Machinery Organization.

The Corley Textile Specialty Company, with offices in the Empire Bldg., of Atlanta, Ga., is a newly organized company, with a capital of $20,000, and will make a specialty of manufacturing Corley Williams Automatic Thread Guides for Cone Winders.

The company was organized with a view of acting as Southern agents for manufacturers of textile machinery and specialties, and intends to put high class specialty salesmen on the road. They state that they have already started negotiations with several prominent manufacturers, and are ready to consider propositions from reputable concerns who want energetic Southern representation.

The Lafayette Worsted Co. of Woonsocket, R. I., have placed an order for humidifiers with the American Moistening Co., Boston, Mass.

Illumination Expert Offers Services Free.

The aim of every mill superintendent is to produce a maximum of marketable material with a given capital investment. Not one of the many factors which plays a part in the manufacture of a finished product may be neglected without causing a very definite decrease in either the quantity or quality of the mill's production. Most important of all these factors is a trained force of workmen. Scarcely less in importance is the light under which these workmen are required to perform their several occupations. It has been proven again and again that if the lighting of the factory be carelessly provided for, a material reduction in the effectiveness of the mill operatives will result.

The application of light to different needs is a science. It forms a problem best solved by a specialist. For this reason, the Buckeye Electric Company of Cleveland, O., has organized an industrial lighting department whose sole business is to study the particular operations of the various industries, and to develop such systems of illumination as best satisfy their several requirements.

J. W. SMITH.

In the choice of Mr. J. W. Smith as head of this department the Buckeye Company has been very fortunate. In his early days Mr. Smith entered the textile mills of the East, and by actual service became familiar with the work from card room to packing floor. His later experience in electric lighting has given him accurate and wide knowledge of lamps and reflectors, and of the uses to which the various types are best adapted.

To every mill which is interested in making its lighting system an aid instead of a drag on production, the Buckeye Electric Company offers the services of its industrial lighting department. Moreover these services will be given without charge. In view of the care necessary to prepare the raw material, to follow it step by step through the various processes, and finally to convert it into a perfect product, it would seem the part of wisdom on the part of manufacturers to consult such a specialist.

Tae Lowell Textile School.

The increasing demands on the Lowell Textile School have made necessary an important addition in the form of a single story building fronting Colonial Ave. and extending from Southwick Hall to the Falmouth Street building. This addition will be used for the woolen, worsted, chemistry and dyeing departments. The work of erection has been planned and supervised by the engineering department of the school. A post graduate year is being planned with the object of giving instruction in subjects bearing on the training of a mill manager. Hermann H. Bachmann, who has had a long experience in designing textiles in this country and Germany, has been appointed successor to Prof. Fenwick Umpleby, who was head instructor of the designing department from the foundation of the school to within a few months when he resigned to become principal of the Bradford-Durfee Textile School at Fall River.

American Moistening Co.'s Southern Office.

On November 1st the Southern office of the American Moistening Co. was removed to the Rhodes Bldg., Room 209, Marietta St., Atlanta, Ga. The office formerly maintained at Charlotte, N. C., is discontinued. J. F. Porter, their Southern representative, will give prompt attention to all correspondence and inquiries addressed to the new office.

A Record Attendance.

The Bradford Durfee Textile School, Fall River, began its winter session on Oct. 3 with the largest number of students in the history of the school. The Fall River school has been in the past devoted to the cotton industry in all its courses. Principal Umpleby, who has been chief of design at the Lowell Textile School for upwards of 13 years, will now develop the textile design and weaving departments.

Instruction will now be given in design for woolen, worsted, linen and silk as well as for cotton, the staple trade of Fall River. The school is equipped with all the latest machinery for the cotton industry, and will now add machinery for other branches as occasion demands.

The number of evening students is divided as follows: Carding and Spinning, 93; Warp Preparation, 58; Mule Spinning, 10; Mill Calculations, 30; Plain Weaving and Fixing, 183; Fancy Weaving, 64; Jacquard Weaving, 16; Designing, 94; Chemistry and Dyeing, 57; Engineering, 275; Machine Shop and Drawing, 172; Cotton Grading and Stapling, 52; Textile Arithmetic, 62; making a total of 1,162 students in the evening classes. The number of students attending day classes is 45.

The Pacific Mills, Lawrence, Mass., have placed an order for the complete equipment of their new worsted mill with the American Moistening Co., Boston, Mass., for their humidifiers.

Jottings in Canada.

There is one thing which interferes with the progress of the Canadian textile industry. It is the preferential tariff, which admits foreign goods, mostly British, at ruinous prices into the Canadian market. All other factors are secondary to this one in forcing the Canadian manufacturers to make the loud noise which is constantly heard in Parliament at Ottawa and which will not cease to be dinned into the ears of the "powers that be" until a revision of the tariff has been made for the better protection of textile manufacturing.

Shortly after the present tariff became a law the industry in Canada lay flat on its back and the manufacturers lived from hand to mouth before ways and means were found to counteract in a measure the effect of the law. So bad was it during the opening chapters of the textile tragedy in Canada that many concerns were forced to the wall never to start again, and today there are less textile factories in operation than there were a few years ago.

In recent years a large number of Englishmen have settled in Northwest Canada and in line with the proverbial partiality for home-made goods they have demanded English woolens and worsteds in preference to Canadian fabrics. Canada has perhaps 7,000,000 people at this writing, yet it can boast of only two or three large woolen mills and only one large cotton mill outside of those which have been merged during the last year. In the Province of Quebec there is the largest woolen mill in Canada, which has so far successfully resisted the effects of the preferential tariff by placing itself as far as possible in the position of the woolen industry of Great Britain. In order to compete successfully with British goods this mill is forced every year to offer 10,000 to 12,000 designs in order to compete with the vast number of foreign designs placed on the Canadian market by Great Britain and Germany.

The smaller woolen mills in Canada have had a hard row to hoe. There are still in the Dominion a large number of small mills that do custom work, selling their product in the vicinity of the mill. There are others that sell through regular channels and some that keep their own salesmen on the road and sell wherever they can. In one of the small Canadian mills I saw a number of pieces of English cloth which had been purchased by a local tailor and sent to the mill to be shrunk. The mill owner informed me that even with the duty paid and the work he did on the cloth the price paid was lower than he could afford to sell the same quality of goods.

The sun shone brightly that Sunday morning when I got off the train in Sherbrooke. I appealed to a native to direct me to my hotel, but he shrugged his shoulders and answered in French, "Je ne comprends pas." I had forgotten for the moment that I was in Canada and in the stronghold of the French-Canadians—the Province of Quebec. As soon as I recalled where I was I asked him in the French language to direct me to my hotel and he went out of his way to show me the route. Early Monday morning I called upon Mr. Lomas of the Magog Woolen Mill. Mr. Lomas greeted me in a way that made me feel at home at once.

In the afternoon I called at the office of the Paton Manufacturing Co. and had the pleasure of chatting with Mr. Thewlis, the superintendent. I was much impressed by his ability to memorize statistics, for a man with this ability has always made me envious. Mr. Thewlis came from the States to the Paton Manufacturing Co. about five years ago. While engaged in conversation with Mr. Thewlis, a French-Canadian woman came in with her young son, who had for some reason been discharged by the boss weaver. There was fire in her eyes, but whether it was intended for her delinquent son or for the mill people I could not quite make out. She gave the clerk a graphic account of what she had given to her son and of the things she was going to do to the mill people. One of the office staff stepped up and interrupting us said: "You are good at managing women, Mr. Thewlis, please straighten the matter out with this one." With a twinkle in his eye Mr. Thewlis went out. Later on I saw the boy pass into the mill with a grin on his face. All three of the parties to the disturbance, boss weaver, mother and urchin had been straightened out by the diplomacy of Mr. Thewlis. Paradis.

A Cotton Yarn Department.

A yarn department for the sale of cotton yarn on commission has been established by John F. Conway, 62 Greene St., New York, and will be financed by the well known firm of L. Erstein & Bro. Consignments of yarn are solicited from the mills. Mr. Conway asks spinners to communicate with him regarding their present requirements as to selling their product and states that liberal arrangements will be made regarding the marketing of the product through his department.

Merchants Mfg. Co. of Fall River, Mass., are installing humidifiers, having adopted the American Moistening Co.'s system.

A Large Order for Finishing Machinery.

After careful investigation the Lawrence Dye Works, of Lawrence, Mass., recently placed its order with the Rodney Hunt Machine Co. of Orange, Mass., covering a complete equipment of wet finishing machinery to be used in their new mill. This order covered fulling mills, washers and dyeing machines. The new mill will be equipped with modern machines throughout. The Rodney Hunt Machine Co. have made some very marked improvements in their various finishing machines within the last few years, and having an electrically operated plant equipped with the most modern machinery, they are able to manufacture with speed and give very prompt deliveries.

Calumet Mfg. Co., Liberty, S. C., have adopted the American Moistening Co.'s system of humidifiers.

Recent Textile Patents.

D C HED—Textile Patents.

BRAIDING MACHINE. 971,403. Robert C. Rahm, Wyomissing Borough, Pa.

CARBONIZED FABRIC. 972,110. Frederic L. Horton, Bridgeport, Conn.

CLOTH BEAM for Looms. 973,134. Jonas Northrop, Hopedale, Mass.

CLOTH FINISHING Machine. 971,575. Robert T. Todd, Lawrence, Mass.

CLOTH STRETCHING Machine. 971,123. George Durrant, Manchester, Eng.

DRYING MACHINE. 971,176. Thomas F. Dexter, Providence, R. I.

DYEING MACHINE. 972,822. Robert H. Comey, Camden, N. J.

FIBER-YIELDING Materials. Reducing. 971,457. George H. Marshall, Roanoke Rapids, N. C.

FIBROUS MATERIALS. Apparatus for Felting. 973,280. Edward M. Knight, New York.

FILLING REPLENISHING Mechanism. 973,133. Jonas Northrop, Hopedale, Mass.

FLAX RETTING. 971,076. Petro Riva, Buenos Ayres, Argentina.

HOSIERY FORM and Holder. 971,844. Joseph Huebsch, Milwaukee, Wis.

KNITTING MACHINE, Etc. Stop Device for. 971,923. Exilias Paquette, Lowell, Mass.

KNITTNIG MACHINE. Automatic Rib. 973,236. Herbert B. Taylor, Philadelphia, Pa.

KNITTING MACHINE Yarn-Changing Mechanism. Automatic. 971,986. Albert Gee, Philadelphia, Pa.

LOOM. 971,632. Frederick Ott, South Bethlehem, Pa.

LOOM DOBBY. 971,846. William Kahre, Wharton, N. J.

LOOM. Needle. 971,487. John C. Brooks, Paterson, N. J.

LOOMS. Spool Changing Apparatus for. 971,541. Albert G. Koechlin, Steinen, Germany.

LACE-FASTENING Means. 972,620. James Hennessey, Marion, Ind.

LACE REEL. 972,745. John Barry and Michael L. Shaughnessy, Westphalia, Kans.

LOOM. Weft Replenishing. 972,722. Eppa H. Ryon, Worcester, Mass.

LOOM for Weaving Pile Fabrics. Needle. 971,355. John C. Brooks, Paterson, N. J.

LOOM STRAP. 972,641. Edward Poole, Kersley, Eng.

LOOM for Weaving Short Weft Fabric. 971,072. Henry E. Rathbun, Worcester, Mass.

LOOMS. Thread Cutting Device for Automatic Weft Replenishing. 972,118. Johann Martinek, Viersen, Germany.

LOOM. Filling Replenishing. 973,265. William F. Draper, Hopedale, Mass.

LOOM. Filling Replenishing Mechanism. 973,127. Jonas Northrop, Hopedale, Mass.

LOOM. Weft Replenishing. 972,904. E. D. Osgood and Alonzo E. Rhoades, Hopedale, Mass.

LOOMS. Thin Place Preventor for. 973,129. Jonas Northrop, Hopedale, Mass.

LOOM. Automatic Weft Replenishing. 972,918. Alonzo E. Rhoades, Hopedale, Mass.

LOOM. Automatic Weft Replenishing. 972,942. Edward S. Stimpson, Hopedale, Mass.

PICKER STICKS. Cushioning Stop for. 973,132. Jonas Northrop, Hopedale, Mass.

PILE FABRIC. 971,527. George Crossland, Watertown, Mass.

SHUTTLE. 971,187. Joseph Gagnon, Fall River, Mass.

SHUTTLE BOX. 973,130. Jonas Northrop, Hopedale, Mass.

SHUTTLE POSITIONER. 973,128. Jonas Northrop, Hopedale, Mass.

SINGEING TEXTILE Fabrics. Device for. 13,154. Gustav Gin, Paris, France.

TEXTILE FIBERS. Obtaining. 972,403. Josef E. Pfiel, Austria-Hungary.

TEXTILE MATERIALS in Lengths. Apparatus for Treating. 971,778. Isaac E. Palmer, Middletown, Conn.

THREADS. Die for Cutting. 971,748. George E. Hill, New York.

THREADS of Yarns from Warp Beams. Finishing. 972,760. George A. Fredenburgh, Pawtucket, R. I.

WASHING and Cleaning Machine for Textile Fabrics and the Like. 971,745. Paul Guengerich, Gera, Germany.

WOOL WASHER. 973,388. Frederick C. Sargent, Westford, Mass.

WARP STOP Mechanism. 973,102. John W. Bounds and James C. Ellenburg, Kannapolis, N. C.

WEAVING MECHANISM. 972,349. William H. Drury, Waltham, Mass.

Recent Textile Trade Marks Registered.

"Elberta." Ginghams. Harris-Lipstiz Co., Dallas, Tex.

"White Cross." Hosiery, undershirts, drawers, etc. Dayton Dry Goods Co., Mineapolis, Minn.

"Delpark." Bedell Parker, New York.

"Kingsley." Woolen piece goods. S. Stein & Co., New York.

"Roxonia." Knitted underwear, etc. Kahn & Frank, New York.

"Climax." Hosiery. G. & A. Wise, New York.

"Rein." Men's and youths' overcoats, vests, etc. Samuel E. Reinhard, Baltimore, Md.

"Stycos." Threads and yarns. Superior Thread and Yarn Co., Wilmington, Del.

"Excelsior." Shirt waists, dresses, etc. R. Kirshbaum & Son, Indianapolis, Ind.

"Nymph." Tulle nets and chiffon. L. & E. Stirn, New York.